

C·O·N·T·E·N·T·S

Vol. 9

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Win, Place or Show

BACK of the flying strides—the swiftness and the stamina that lead to victory—is Science. The science of a life-skilled trainer, who wins no glory, but spends himself in developing the qualities that enable his horse to come through with flying colors.

Like prize-winning horses, profit-winning flavors depend on science for their perfect development. The trainer, working in obscurity—apply-

ing all his skill—all his experience to produce a winner, presents an apt parallel to Foote & Jenks scientists toiling in their laboratory to perfect the flavors that win "Blue Ribbons" for your confections.

Our half-century of specialization in this single task is your assurance of flavor quality that enables your product to do more than "place" or "show"—quality that makes your product a sure winner—able to meet the severest challenge.

FOOTE & JENKS—JACKSON, MICH.

FOOTE & JENKS' "ISOLATES"

VANILLA . . . LEMON . . . ORANGE and 12 others

THIS Company approaches a half-century of specialization in the task of developing and perfecting terpenes, super concentrated, water soluble flavors. Our entire time and attention are devoted to the manufacture of SOLUBLE Concentrates—research work, scientific control, and the constant testing of our products in various forms of foods. It will be to your definite advantage to avail yourself of this specialized service.

The INDISPENSABLE INGREDIENT
scientifically developed flavors!



Stollwerck Chocolate Co.

STAMFORD, CONN.
(One Hour from New York City)

CHOCOLATE and COCOA MACHINERY FOR SALE—PIECE MEAL

We have purchased all the machinery and equipment of this well-known plant and are selling them at specially low prices, for quick sales directly from the floors of the factory, because the machinery must be removed promptly.

The machines which we are listing below, operated very satisfactorily until the factory shut down recently. This equipment is of the latest type and is in excellent condition.

We can make prompt shipment. Prices are quoted F.O.B. Cars, Stamford, subject to prior sale. Machines will be loaded on cars by our experienced mechanics.

The machines are still set up in their original positions for your inspection.

2 CARVER COCOA BUTTER PRESSES

with metal filter plates; self-filling, self-ejecting; also complete pumping system.

2 LEHMAN COCOA BUTTER PRESSES 228 S. S.

fully automatic, with metal filter plates and with pumps.

2 Lehman Cocoa Powder outfits, very large size, with crushers, pulverizers, coolers and bolters, self-contained

2 Cocoa Filter Presses, 15 pot, 24" plates.

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8 Stollwerck Steam Roasters, 500 to 5,000 lbs.

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1 Baker 5-Roll Refiner

12 Stollwerck 5-Roll Refiners

2 Lehman 3-Roll Refiners

2 Baker 3-Roll Refiners

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7 - 500-lb. Tempering Kettles

3 - 300-lb. Tempering Kettles

4 - 1000-lb. Day Paste Mixers

25 Storage Tanks with mixers and without mixers, sizes 5000 lbs. to 50,000 lbs. capacity

1 Lehman Dust Cleaning Machine.

1 Burns Cocoa Bean Cleaner

1 Lehman Germ Separator

MILK POWDER OUTFIT, COMPLETE

just installed, never used; with 4-ft. Vacuum Pan, steam pump, hot wells and plow-type mixer, all complete

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1 Racine Chocolate Depositor

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2 Springfield Melangeurs

2 Springfield Chasers

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7 Slot Machine-size Wrappers

1 - 15-ton York Ice Machine

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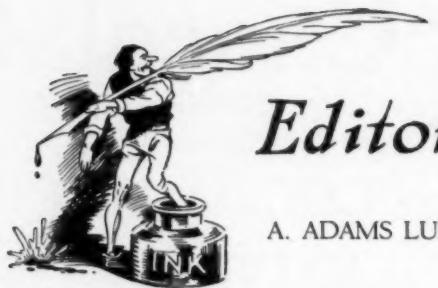
3 Huber Automatic Coal Stokers

This is an excellent opportunity to improve and modernize the equipment of your factory with very desirable machinery at very low cost

Select the machines which you are interested in and wire or write for prices and particulars to

UNION CONFECTIONERY MACHINERY CO.
INCORPORATED

318-322 Lafayette Street, New York City



Editorial

A. ADAMS LUND, Editor

Do Be Consistent

YOU wouldn't think of walking down the main business street wearing only a straw hat and a bathing suit, would you! Yet by taking up the cudgels of the importers and demanding of Washington lower duties on almost everything *but* candy, haven't we allowed ourselves to be maneuvered into a position equally as inconsistent and perhaps even more embarrassing to the industry as a whole?

Candy manufacturers have gone on record, both as individuals and as an industry, that in order to make a suitable profit they must have low-priced sugar, low-priced fruits and nuts, low-priced gelatine, in short, low-priced everything which goes *into* candy, whereas candy itself must be protected by a constantly mounting tariff wall to keep out foreign competition made possible by low-priced labor. Washington rightly regards this attitude as inconsistent, selfish and unsportsmanlike. For if we in the candy industry are entitled to greater protection on candy—so is every other American producer—and that means *higher* sugar, *higher* corn syrup, *higher* nutmeats, *higher* albumen, and *higher* everything else which goes to make up candy.

To be sure, if the fates were so kind, we probably wouldn't *object* to a low duty on peanuts accompanied by a high duty on candy—but just imagine what a squawk there would be from the candy industry if Congress should decide to put *down* the duty on *both* peanuts and candy! Such a thing is unthinkable, of course, because Congress knows only too well that the floodgates are bulging under the pressure of cheap German candy and cheap Chinese

peanuts and that it would probably be the ruination of both industries were the bars to be lifted ever so slightly.

The senators from Virginia and North Carolina will probably cast their votes for a high tariff on candy about the same time that the gentlemen from New York and Illinois agree to support a higher duty on peanuts. The essence of this whole tariff business is give and take—and not the "*you give and I take*" variety, either.

As for the importers who impertune us to write all those letters to our senators and congressmen demanding reductions in this or that schedule—there is nothing inconsistent about *his* position. *He* has no manufacturers to "protect." Low duty on everything is his story, and it is certainly his privilege to stick to it. It follows, though, that he is the logical person to present that story at Washington. Not you or I.

Already members of Congress have openly accused the candy industry of looking upon the tariff measure as something designed for its own selfish ends. Now you know and I know that that is not a true reflection of the spirit of fair play which prevails generally throughout the candy industry.

Nor is it a healthy attitude to have confronting the defense committee when they sojourn down to Washington seeking legislation with which to curb the malignant warfare of the tobacco interests. We must do everything we can to dispel that feeling of suspicion with which the candy industry and all its works is likely to be regarded on Capitol hill.

ASK ME!

*Five minutes of fun and mental exercise.
The answers to all questions will be
found in the reading matter of current
issues.*

JULY QUESTIONS

1. Of what significance to the candy industry is the Smoot Bill, introduced into the U. S. Senate during June?
2. Why are licorice candies black?
3. Why does dextrose dissolved on the tongue produce a sensation of coolness?
4. In which classes of candy is it expected that this peculiarity of dextrose will be advantageously used?
5. Name a colloid present in the yolk of eggs which is capable of emulsifying oil and water.
6. Of what significance is the commercialization of this product to the manufacture of beverage cocoa?
7. How is the skin of a marshmallow formed?
8. What is meant by "selective fermentation" as applied to cacao?
9. To what extent may the addition of dextrose be employed to increase the density or total solids content of a saturated solution of ordinary sugar?
10. Under what conditions can fermentation result from crystallization in marshmallow manufacture?

Answers to June Questions



1. *What are the four principal uses of licorice?*

Ans. As a flavoring ingredient for high class confections; as a foaming agent for fire extinguishers; as a fibre base for wall board, boxboard, etc.; as a tonic and mild laxative in pharmaceuticals.

2. *Is there any colloid available in commercial quantities in this country, which has the power to emulsify oil and water, and to make a homogeneous mixture of fats like cocoa butter which will prevent its lowest melting fractions from separating out until the temperature of the collapse of the entire mass is reached? (Around 94° F.)*

Ans. Yes. A vegetable emulsify-

ing agent derived from the soya bean is now available in this country in commercial quantities. It is present in the yolk of eggs and in smaller quantities in all germ oils, including that of the cocoa germ, which is normally discarded during the process of cleaning the nibs.

3. *What significance does the commercialization of this product hold for the confectionery industry?*

Ans. Practical and scientific tests conducted by this paper indicate that it will impart a superior gloss to chocolate and retard graying up to the point at which the chocolate collapses and at which point the chocolate becomes unsalable in any event.

4. *Which was the only major item of confectionery manufacture to increase in both sales volume and sales*

value during 1928?

Ans. According to the preliminary report of the Department of Commerce, June 6: Chocolate bars, solid and coated, were the only goods which showed an increase in 1928 over 1927 in both quantity and sales value.

5. *Did the candy industry on the whole sell more or less candy during 1928 than it did in 1927, and did it receive a higher or a lower average price for it, per pound?*

Ans. The Department of Commerce figures indicate that the candy industry sold about 3 per cent more candy for about 1½ per cent less money. The average price per pound dropped from 22.69c to 21.69c, a decline of an even penny a pound.

(Continued on page 60)

Putting Candy on a Research Basis

—Earning Power of Technical Research
pointed out in an address at West Baden

By DR. HARRISON E. HOWE

Editor, Industrial and Engineering Chemistry

PERHAPS the most outstanding characteristic of our modern American industry, even to the most casual observer, has been not only the change but the constant change which comes over our particular industry. We believe in obsolescence; we provide against obsolescence. I suppose we would never find such a situation as once occurred in an English industry where a concern purchased the worn-out machinery of another outfit that was buying new equipment largely because, inasmuch as it had done good service for the concern which purchased, it was assumed it must be good for the ones who were buying it.

You will find it a very satisfying pastime to put down some afternoon a list of things that have become commercial and new since you came to be very much of an observer. I claim that I am still very much of a young man but I find a considerable number of things have taken place since I became interested in what is going on.

I note, for example, automobiles, motion pictures, the radio, the telephone, the mazda lamp, rayon, coal tar dyes, synthetic nitro-cellulose lacquers, cellophane, various hard surfaced roads, alloys—all those things have happened since I have been around watching what is going on.

When I was a youngster the hairpin manufacturers were doing a very good business. There were a great many people making bicycle tires, cotton stockings; buggy whips were also a basis of a real industry when I was a youngster and I remember that one outfit started a four million dollar annual business in the manufacture of stiff paper for the muttonleg sleeves of dresses that my sister and mother wore in those days before styles changed and they, too, went out of business.

The only candy that I can re-

member as a boy are gum drops, hard candy that always came in barrels, peanut bars, stick candy, chocolate drops that always came in pails divided into five parts by paper cartons, and the home pulled taffy. But mixed with that was the sweet mixed chocolate we stole from the kitchen.

Research Determining Stock Values

Perhaps you saw, as I did a year or so ago, that editorial in the Wall Street Journal contrasting the American Telephone & Telegraph Company with one of the telegraph companies and advising people to sell their stock in the latter, based

PREVENTIVE RESEARCH

RESEARCH is always better as a preventive than as a cure. If an individual delayed calling the physician as long as the average industry delays calling the scientists, our insurance premiums would soar beyond the possibility of paying them.

—Dr. Harrison E. Howe.

wholly on the difference in point of view toward scientific research on the part of the two organizations.

It has often happened that an industry has met a state of arrested development until something more could be found out in the way of fundamental truths concerning various materials with which they work or problems they had to overcome.

While we grant that the factor



[38]

of style changes and shifts on account of increased population have a great deal to do with changes in business, I think nevertheless we can show that the principal difference in business today as compared with the gay '90's is in the application of more, new and better knowledge to our problems of marketing, manufacturing, storage and all other parts of our industry. That new knowledge has come from the laboratories throughout the world.

I don't want to claim too much for science. You will be reminded at once of the rooster that rolled the ostrich egg into the barnyard, you recall, and then said to the hens, "Now, girls, I do not wish to seem to be critical; I merely want to call attention to what is being done elsewhere."

I do think, with all due regard for what the practical man has done, I must say in passing that the practical man has accomplished great things in many industries where no one would have thought that the wasteful, empirical methods could have done so much, and we owe him a great deal for what has been done along those lines, but Disraeli said that the practical man is too often one who practices the mistakes of his forefathers, and I think that is becoming increasingly true in the industry of today.

We must advance through the co-ordinated work of science. The industries that depend upon science, that are nurtured by science, are those that have made the greatest progress, and if you will take the year's earnings of our great American industries, I am sure you will find those at the top are the ones that depend upon scientific work or have reached their present position because of the science applied in that particular instance.

Preventative Research

Research is always better as a preventative than it is as a cure, and I think it can be safely said if

WHEN DOES RESEARCH PAY?

Research pays largely when it guards your raw materials, prevents waste, or when it finds a way to put waste to work; it pays when new products are produced. It also pays when it protects guarantees.

—Dr. Harrison E. Howe.

the average individual delayed calling the physician as long as the average industry delayed calling the scientist to help him out in his difficulties, our death rate would greatly increase and our insurance premiums would soar beyond the possibility of paying them.

Research is not a cure-all and should not be regarded in that sense at any time. It requires a great deal of patience. It is costly to carry on. It requires what Dr. Teeple has called "educated money." If we only had more educated money, at the time the Viscos patents were sold in the United States they certainly would have brought more than \$2,500, and yet they were the basis of the great rayon industry of today in this country.

Also we have to carry on our research with a certain amount of continuity. We mustn't lay down on the job. One of our greatest difficulties is the selection of the proper problems. We have to realize that a problem, when properly stated, is probably half completed. The selection of men to carry on the research is another considerable factor in itself.

Furthermore, research, after it has been done, must be applied to be of any use to those of you who support it. I have often recommended to trade associations who are about to undertake research that they provide in their organization for someone whose business it will be to see to it that the members actually apply the results that have been won for them at such great expense of time and effort in the research laboratories.

It also requires that the members who are going to get the most out of research of their own technical staff are able to take the data supplied by the research laboratory and apply it in their way to the problems of a particular manufacturer.

But notwithstanding these various things, it might be said that while you may hesitate to go into research, it can be most emphatically said that research pays, and pays largely.

Does Research Pay?

In "Factory and Industrial Management" for October, 1928, there is an article on this question of research and the extent to which it pays. There is listed statistics from questionnaires sent to 800 manufacturers, 797 of whom said without hesitation that it had paid them well. Three had a contrary opinion, and they represented some very minor establishments.

These industries were put into eleven classes, and we find by percents, 37% carry on research to lower costs, 34% to improve quality, 20% to develop new uses for their product, and 15% to develop new products or by-products. When brought down to the food industries, 27% carry on research for lowering costs, 37% for improvement of quality and service, 23% to develop new uses, 13% for by-products and new products, and of the capital expended, that is, the amount expended on the percentage of capital for industry as a whole and for the food industry, an average of 1.3% of the invested capital was being spent on the research laboratories.

Just how does research pay? To be most interesting to many people, research is only recognized when it brings something on the market, something that can be bought and sold, something that makes life easier or more safe or more luxurious or perhaps longer and very rarely do the results of the laboratory come on the market labeled as such. They come in the form that the public ordinarily does not appreciate that any research whatever was back of it.

But research pays largely when

it guards your raw materials. In these days of high labor costs, no one is justified in taking into his plant a sub-grade material from which he may only be able to make a second grade product. A great deal of money is lost when one makes seconds instead of first grade products.

This widening of choice of raw materials through research also gives a manufacturer the opportunity to make the most of various economic situations as they change. Research, of course, pays largely when it prevents waste or when it finds a way to put waste to work.

Putting Wastes to Work

We have one of our best examples in the cotton industry where as high as \$50 a bale has been added to the value of cotton thanks to the products made from cottonseed, various oils, etc., that have come from that particular plant.

Down in Laurel, Miss., we have the Masons exploding the long leaf pine chips and making the Masonite which you may know as insulating board or a pressed wood that is being used inside and out for various sorts of structural material. He followed the lead of the breakfast food materials people and by heating these chips to 70 pounds pressure for three minutes and then to 1,000 pounds for 15 minutes and suddenly releasing the pressure, the steam generated within the chips is sufficient to blow the fiber apart and give a fluffy material without the loss of the natural lignites which ordinarily bind those fibers together in the wood, and the result has been turning of the waste into a very satisfactory material that is competing strongly with certain classes of lumber.

Research pays largely when new products are produced. For example, rayon, a fiber material made to the extent of 125,000,000 pounds in the United States alone in 1929 not only offers silk a great deal of competition, but cotton as well. Cellophane, with which you are very familiar, is another new product



PUTTING CANDY ON RESEARCH BASIS

offering competition to fancy papers.

Protecting Guarantees

Research also pays when it protects guarantees, and I have known of one or two industries that have been forced into research on account of specifications which I think is not a very healthy situation. Whenever an industry permits its customers to know more about its business than it knows itself, it is in a rather poor way, but there have been users in several fields that have progressed further than the manufacturer and have been able to specify what was required so that the manufacturer himself was forced into scientific work in order to have his goods meet specifications.

A well informed woman not long ago took a child's coat into a department store and explained that she had bought the coat for all wool and submitted her evidence to prove that it was not all wool. The buyer, with 17 years of experience, with quite genuine surprise said, "Can you really tell if a garment is all wool?" which is only an indication of how we are advancing in this country in education.

A few years ago it used to be said that America on the average was in the seventh grade so far as intelligence is concerned. I believe now they have moved us up to about the fourteenth grade, but I do know that science is permeating further and further downward in our educational system.

When I was in school you had to get chemistry and physics and biology in college; a little later you could get them in high school, a little later in junior high school; now they begin to teach them in the grade schools. You fellows are having, all the while, a better educated public with which to deal and you want to be very careful what sort of guarantee you make unless you have some scientific basis on which to place it. Otherwise they can very readily become a very seriously embarrassing liability.

Research Breaks Monopolies

Monopolies, if maintained too long, are always just a challenge to the laboratory and sooner or later the laboratory will supply the answer, I am sure.

An industry that declines to engage in research often suffers from surprise, as did our distillers of

hard wood. A hundred million dollars was invested in the installation of hardwood in this country for the manufacture of wood alcohol, acetates, acetic acids, acetone, charcoal, etc. They had heard that some synthetic work was going on abroad but did not pay much attention to it, and when the first cargo of 50,000 gallons showed up in New York the industry suffered a very considerable shock from which it has not yet fully recovered, and now we are manufacturing synthetic methanol in our own United States.

But research also creates and saves industry. By applying research to the natural gas in West Virginia, a whole new industry has been built up in the glycols, plasticizers, solvents, anti-freeze mate-

rials that come from that source.

Photography is based on a single scientific fact that some salts of silver turn dark in the light. The Welsbach mantel saved the gas industry until new uses for it as a fuel in the home and in industry could be developed.

FUNDAMENTAL RESEARCH MOST REMUNERATIVE

RESEARCH creates and saves industry. Naturally, it is what creates the new competition and makes banking hazardous . . . But research pays most when conducted on fundamentals—when it is NOT done on a cash register basis.

—Dr. Harrison E. Howe.

science does constantly put a premium on skilled labor and that is one reason why we should continue our universal education program.

Naturally research creates the new competition. As one banker told Kettering, it makes banking hazardous. Because a bank loans money on a certain balance sheet today, when the time comes to pay that debt perhaps that concern has been far distanced in the race by some competitor that has made use of research, and the answer is of course that banking is made hazardous by research for those who fail to make the most of what science offers.

Research Builds Better Personnel

Then there are also a number of intangibles of this research proposition that I would emphasize because, after all, they are worth more than the dollars and cents side of the program. It gives a manufacturer confidence in the future in the way that nothing else can, to really know the science upon which his business is founded. It attracts a better personnel to the industry. I have that directly from one of the coal people and I think the coal industry can be accused of being the most backward in this country with respect to research. Young men were not attracted to the coal business until the coal business started to go into research work. Then the brainier fellow began to become attracted to it as a new, re-vitalized industry.

Research going into an established plant seems to re-vitalize the whole staff and they begin to apply in their own work new ideas encouraged by the forward-looking atmosphere in which they find themselves. Business becomes a fascinating game and no longer merely the routine of getting a few dollars to put into the bank. It's turned into one of the most fascinating games that one may thrust oneself into.

The Twenty-four Hour Paint

Kettering, the chief engineer of General Motors Corporation, pointed out to manufacturers of paints and varnishes that 26 or 28 days was too long, economically, to finish a fine motor car, so they came together and said, "Now, if you'll change your specifications we can give you a paint lacquer with which you can finish a car in 24 days."



INSURING BUSINESS AGAINST IGNORANCE

If you lose your plant by fire, you can build a better plant, but if you lose your business through failure to know what is going on, you have certainly lost it indeed. The only insurance that I know of against ignorance is the insurance that comes by Scientific research.

—Dr. Harrison E. Howe.

And Kettering said, "I'm talking about 24 hours."

They smiled and shook their heads sadly and said, "It can't be done. Paint and varnish dry too slowly."

But Kettering thought of the silverware people. He had learned that for many years the silverware people had been coating their flat ware with cellulose lacquer which prevented tarnish, so he sent for a gallon of that lacquer, and he said, "We're going to lacquer automobiles."

As soon as Duco became commercial, Kettering invited the president of one of the paint concerns to have lunch with him. He drove up in a fine new car, and as they sat talking, Kettering took some samples out of his desk and said, "If you were going to repaint your car, what color would you choose?"

The paint man said, "I haven't the slightest intention of repainting that car," but he picked out something that pleased him. Kettering put the samples back in the pile and put it in the desk. When they returned from lunch, the car sat at the curb entirely refinished in the color he had chosen before lunch. That was Kettering's way of impressing upon these people that in these days you cannot safely say that a particular thing cannot be done.

Cellophane, a Related Product

You are also very familiar with some of the other things done in solution. You people have used Cellophane probably as much as anybody, and Cellophane does not differ from these linters excepting in having some glycerine in it. It is reconstituted cellulose and I submit a very pretty piece of engineering and research—to take a viscous, opaque solution of cellulose, reconstitute it in the form of a film, and make that film literally by the mile.

You don't use so much of this heavy material, 68/10,000ths of an inch in thickness. The material you are familiar with is the 8/10,000ths of an inch material, and you know

better than I can tell you what that has meant for the candy industry.

I have known of instances personally where sales have been marvelously increased by the use of protective wrapping material to allow the customer to see what he was buying and at the same time assure him it is protected from dust and handling germs, etc. These fancier sorts may be more new to you. Here is some silk-finished material—green, a red one, and another of amber, and another made for some of our friends in Boston. There are other colors of this material, and all of it represents a new accomplishment in cellulose chemistry, for this is rolled up on rolls a mile and a half in length before it is taken off to be cut into the particular size that may be required for a special industry.

But don't get away from the fact that this material I have just shown you (Duco) and this material here (Cellophane) are not materially different chemically; it's just a question of plasticizer and glycerine and the physical state of the material.

Fundamental Research Yields Biggest Dividends

Now that is the sort of thing that research is doing. Of course, I could have brought here a trunk full of materials and talked you to death on what research has done because the examples are legion and found everywhere.

But research pays most when conducted on fundamentals—when it is not done on the cash register basis, and we had in our lighting a good example of that. The fundamental work on atomic hydrogen which was done by Irving Langmuir of the General Electric Company means that today we save a million

dollars a day in the lighting bill of this country. It also means that we could light a room with a 100-watt Mazda lamp for a thousand hours with current at 7 cents a kilowatt-hour at a cost of \$7.35. If you had the same amount of light for the same time for the same room with the lamps Edison first made, the cost would be \$68.75, and if candles were used to the same extent, the cost would be \$1,500.

There is another way of measuring the earning power of industrial research. Before the world was made smaller by communication and transportation, when we were isolated, when materials and labor were cheap, we probably could get on with much less knowledge than we can at the present time, but today danger of loss to those that are better informed confronts any industry that declines to avail itself of research.

If you lose your plant by fire or flood you can probably build a better plant, but if you lose your business through a failure to know what is going on, you certainly have lost it indeed and it is very difficult to recover. It is the only insurance that I know against ignorance—the insurance that comes by way of scientific research.

That is why we say a Toast to Science, the pilot of industry, the multiplier of the harvest, the conqueror of disease, the revealer of nature's laws, the guide to Eternal Truth.

Carrier Opens Detroit Office

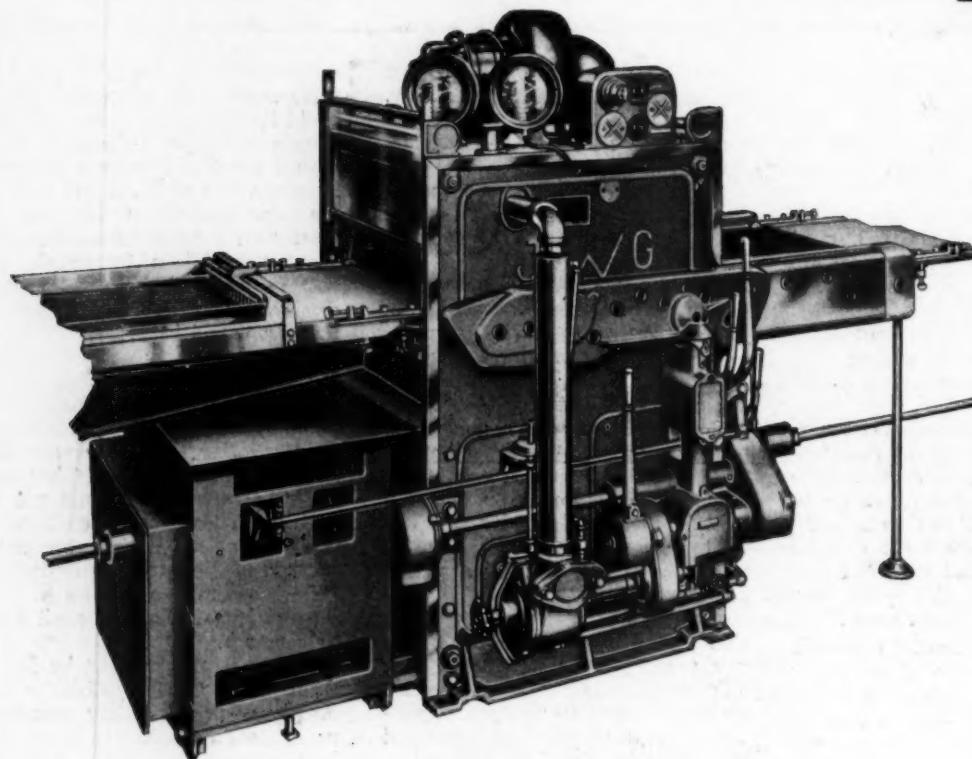
The Carrier Engineering Corporation, specialists in air conditioning, with main offices and laboratories in Newark, N. J., has announced the opening of a permanent engineering and sales office in the Buhl Building in Detroit, under the direction of Mr. Herbert Peacock.

The company has maintained temporary engineering offices in Detroit during the past year and on previous occasions for the purpose of supervising the construction of various extensive air conditioning, cooling and ventilating systems.

Mr. Peacock leaves his position as engineering assistant to the sales manager of the company to take charge of this territory.



Noise Impairs



The continual clash of gears, shrill whine of fans and slap of belts reduce the resistance to fatigue of your coating machine feeders, operators and hand stringers and thus lessens their productive capacity.

The GREER STANDARD COATER

The most talked of chocolate coating machine on the market! Why? Because it embodies the greatest improvements ever made in coating machines. Because it has been designed to produce high quality goods—and it does it! Because it has been tested beside well-known competitive machines and has won every time.

Greer Machinery insures greater profits. It will pay you to investigate before investing!

J. W. GREER CO.

Manufacturers of Confectionery Machinery the Pays Div

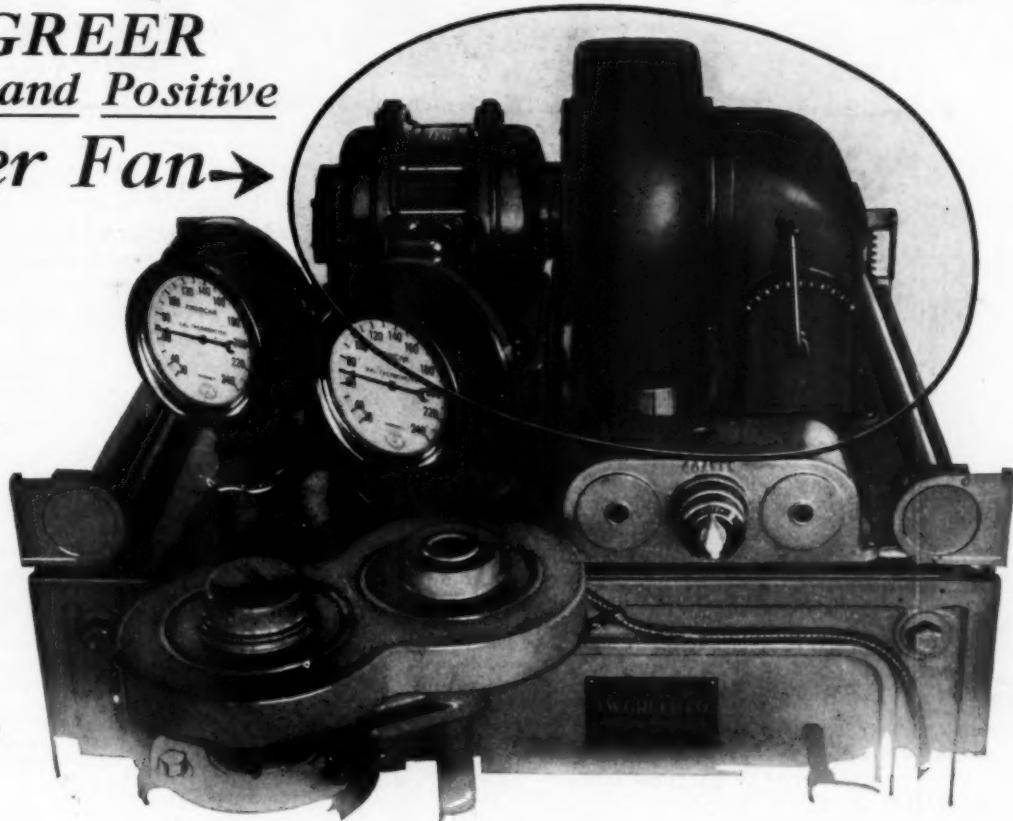
119-137 Windsor Street

CAM

S Efficiency

The GREER
Noiseless and Positive
Coater Fan→

Under present-day conditions efficiency and accuracy of production are paramount—you obtain both with Greer Coaters.



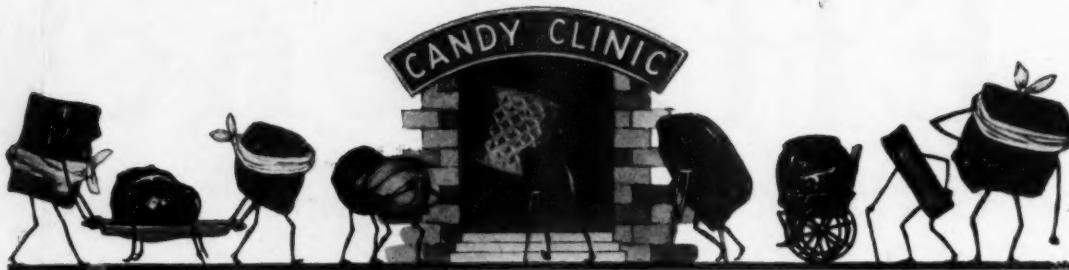
The Greer Coater was the first coating machine to be equipped with a Noiseless and absolutely Positive fan. This fan is directly motor-driven—there is no troublesome belt drive or bearings. Both the Volume and Pressure can be accurately and easily controlled—if you want a 50% coating on your goods, you get it continuously; not 45% one minute, 50% the next, etc.

Competition is now forcing the manufacturer to watch carefully the percentage of coating put on his goods. He therefore demands an accuracy of coating heretofore thought unreasonable. If his plant is equipped with Greer Coaters, he gets it!

COMPANY

*of Confectioners'
Pays Dividends*

CAMBRIDGE, MASS.



The Candy Clinic is conducted by one of the most experienced superintendents in the candy industry. Each month he picks up at random a number of samples of representative candies. This month it is summer specialties; next month it will be hard goods. Each sample represents a bona-fide purchase in the retail market, so that any one of these samples may be yours.

This series of frank criticisms on well-known, branded candies, together with the practical "prescriptions" of our clinical expert, are exclusive features of the M. C.

Summer Specialties

Code 7A 29

Lemon Drops, 2 1/4 oz.—10c

(Purchased in a chain drug store.)
Appearance of Package: Very good.
Cellophane Package: Pyramid shaped, tied at top with yellow ribbonzene.
Lemon Drops: Sugared.
Flavor: Good.

Remarks: This is an attractive looking package and a fast seller.

Code 7B 29

Ass't Gum Drops, 2 1/4 oz.—10c

(Purchased in chain drug store.)
Appearance of package: Very good.
Cellophane Package: Pyramid shaped, tied at top with red ribbonzene.
Gum Drops: Sugared.

Texture: Bad; tasted like paste.

Flavor: Very poor.

Package Contained: 12 pieces rose-flavored gum drops and 2 licorice-flavored. Both licorice and rose flavors were very poor. Why not try using genuine licorice?

Remarks: This would be good package if the assortment were good and the gums made right. Also, if good flavors were used. At 10c for 2 1/4 ozs. these goods can be made much better and good flavors used.

Code 7C 29

Toasted Marshmallows, 6 pieces—5c

(Purchased from newsstand in New York City.)

Appearance of Package: Good. Cellophane wrapped.

Marshmallow: Very good.

Cocoanut: Very fine cut of cocoanut used. Suggest a medium cut.

Remarks: This makes an ideal piece of summer goods.

Code 7D 29

Marshmallow Jellies, 6 pieces—5c

(Purchased in small retail candy store.)

Appearance of Package: Good. White Cellophane wrap.

Contents: 4 gum drops and 2 mallow gum drops.

Gum Drops:

Texture: Good.

Crystal: Good.

Flavor: Hardly any.

Mallow Gums:

Texture: Good.

Flavor: Very faint.

Marshmallow: Good.

Remarks: This is a good 5c seller, but the flavors need looking into.

Code 7E 29

Stick Hard Candy, 5 pieces—5c

(Purchased at railroad concession stand.)

Appearance of Package: Fair. White cellophane wrapped.

Contents: 5 sticks of assorted flavors, cut 2 inches long. Sticks not cut evenly; one broken.

Flavors: Lemon, Lime, Cinnamon and Orange. All flavors were good.

Remarks: These sticks had a very thin coat of grain, enough to keep the sticks from sticking. We understand that this is a big seller.

Code 7F 29

Jelly Marshmallow Bar, 2 oz.—5c

(Purchased in chain drug store.)
White cellophane wrapped.

Layer of Lemon Jap Jelly, layer of Marshmallow, and a layer of Raspberry Jelly.

Jelly:

Flavor: Good.

Texture: Good.

Marshmallow: Good.

Remarks: Bar looks small for this class of goods.

Code 7G 29

Mint Assortment, \$1.00 per lb.

(Purchased in a high class drug store in New York City.)

Appearance of Box: Very attractive—wrapped in white cellophane.

Box: White. Name in green, edged with gold. One-fourth in. green ribbon tied corner to corner.

Appearance of Box on Opening: Good. White top partition with sixteen sections.

Gum Work:

Peppermint Crystallized Green Opera Gums: Good.

Peppermint Crystallized Red Small Round Gums: Good.

Peppermint Crystallized Marshmallow Mint Paste: Good.

Peppermint Crystallized Green Gum Squares: Good.

Peppermint Crystallized Green Gum Rings: Good.

Cordials:

Crystallized Green Small Cordials: Good.

Panned Green Cordials: Good.

Spearmint Panned Yellow Cordials: Good.

Rose Panned Pink Cordials: Good.

Licorice Pieces: Small Licorice Paste: Good.

Crystallized Cream Pieces:

Crystallized Peppermint Cream Squares, White: Good.

Crystallized Peppermint Cream Squares, Pink: Good.

Crystallized Peppermint Cream Green Leaves: Good.

Sugar Wafer: 1/2 Pink, 1/2 White, Peppermint Flavor: Good.

Small Size Chocolate Covered Cream Peppermint, Wrapped in Silver Foil: Good.

Assortment: Very good.

Workmanship: Excellent.

THE MANUFACTURING CONFECTIONER

Remarks: This is one of the finest boxes of summer candies I have ever examined. The cordials, cream work, crystal, etc., are exceptionally fine. If this box fails to enjoy a good season it is no fault of the manufacturer.

Code 7H 29

Summer Assortment, 1 lb. 4 oz.—

\$1.00

(Purchased in high class retail candy store in New York City.)

Appearance of Package: Attractive, and has sales appeal. White cellophane wrapper, with gold seal at each end.

Box: Orange colored wrap, name and scene in green.

Appearance of Box on Opening: Fair; not particularly attractive. All pieces in place. Four plain chipboard partitions used. Suggest that a wax or glassine liner be used.

Gum Pieces:

Assorted Spiced Strings: Good.
Crystallized Green Marshmallow Mint Patties: Flavor very faint and not particularly good.

Jelly and Marshmallow: Good.

Crystallized Orange Patties: Good.

Crystallized Mint Patties: Flavor poor.

Crystallized Licorice Patties: Good.

Crystallized Gum Drops: Texture good, but flavors not up to standard.

Sugar Mint Patties: Good. Flavor fair.

Crystallized Bon Bons: Green, Yellow and Pink: Centers good. Green too deep. Flavors fair.

Assorted Opera Hard Candy Cuts, Wrapped in White Cellophane. Flavors and Colors: Good.

Two Bundles of Chocolate-Covered Sticks: Fair.

Twelve Pieces Wrapped in Colored

Cellophane: Chocolate: Very good.

Caramellows Wrapped in Waxed Paper: Texture and flavor good, but all were stuck to the wrappers.

Crystallized, Vanilla, Strawberry and Chocolate-Covered Squares: Good.
Chocolate Marshmallow Caramels: Good.

Vanilla Marshmallow Caramels: Good.

Workmanship: Good.

Assortment: Very good.

Remarks: This is a mighty good package of summer candies and will appeal to the whole family. The peppermint oil used was not up to standard. The peppermint pieces used in this box should have a good, strong peppermint character which will not deteriorate with age. Care must be taken to get an oil which will stand up.

Code 7J 29

Licorice and Peppermint Assortment, 80c lb.

(Purchased in chain drug store in New York City)

Appearance of Package: Cheap looking. Name of manufacturer not given.

Box: White with lady and knight printed in black. Name in black. Entire "get up" of package is cheap-looking.

Appearance of Package on Opening: Good. All pieces in place and looked good. Black and white partitions used. 15 sections.

Gum Pieces:

Licorice Crystallized Gum Patties: Crystal Good. Flavor Good. Texture good.

Licorice Crystallized Opera Drops: Crystal good. Flavor good. Texture good.

Licorice Crystallized Gum Square: Crystal good. Flavor good. Texture good.

Licorice Gum Drops: Crystallized: Crystal good. Flavor good. Texture good.

Licorice Pastilles—Small: Good.

Licorice Pastilles—Large: Good.

Crystallized White Powdered Sugar Mint: Good.

Crystallized White Cream Leaves: Good.

Crystallized White Cream Wafers: Good.

White Jordan Almonds: Very good.

Workmanship: Good.

Assortment: Too small.

Remarks: A very serious thing has been overlooked on this box which will cause embarrassment to the manufacturer sooner or later. No name was given either inside or outside of the package. This box can be improved considerably. At 80c (which is "top price" for this class of goods) a far better assortment can be made.

Code 7K 29

Mint Variety Package, \$1.00 lb.

(Purchased in chain drug store in New York City.)

Appearance: Neat and summery looking. White Cellophane wrapper, seal on each end

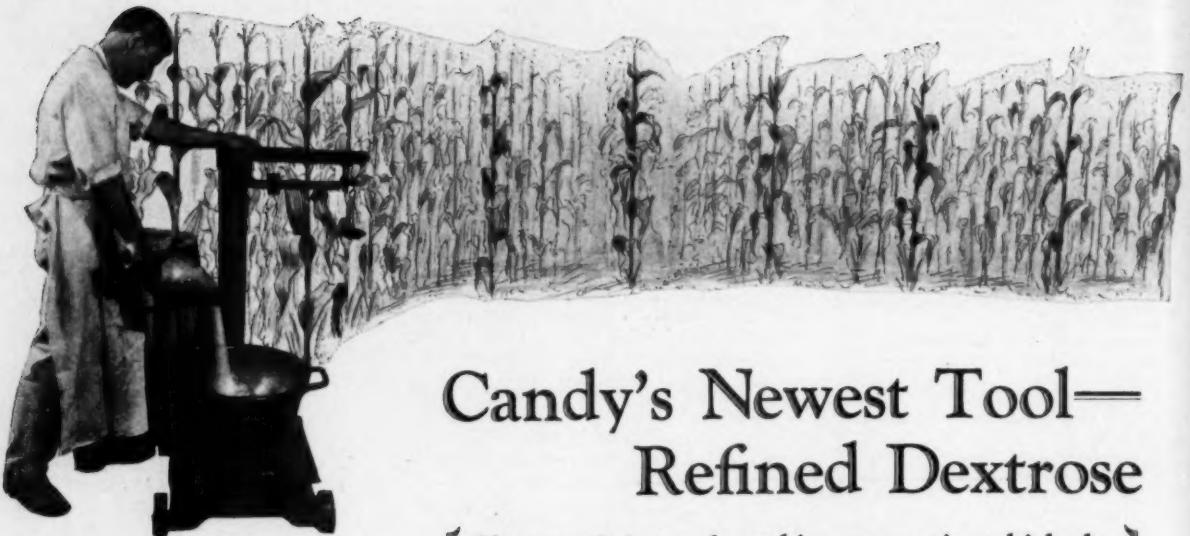
Box: Green ribbon, tied corner to corner. White box with name and mint spray in green, gold edged. Has good sales appeal for this type of goods.

Appearance of Package on Opening: Good. All pieces in place. White top partition used, in fifteen sections. Glassine liner.

Cordial Pieces:

Green Peppermint Cordials: Flavor (Continued on page 49.)





PART TWO.

THE following table, determined by R. F. Jackson and Clara Gillis Sillsbee, research workers of the Bureau of Standards, illustrates the saturation relationship between mixtures of cane and corn sugars:

Candy's Newest Tool— Refined Dextrose

{ Characteristics and working properties which the candy maker must understand if he is to employ Corn Sugar successfully in his candy batches }

BY JOHN M. KRNO
Research Chemist, CORN PRODUCTS REFINING CO.



System: Sucrose, Dextrose, and Water at 30°C.

Solid Phase	Sucrose	Dextrose	Sucrose on 100 gr. Water	Dextrose on 100 gr. Water
	%	%		
Sucrose	68.11	0	213.58	0
	64.22	4.89	207.90	15.83
	60.40	9.70	202.07	32.45
	53.19	18.58	188.41	65.82
	48.60	24.61	181.41	91.86
Sucrose & Dextrose Hydrate.....	47.10	26.59	179.02	101.06
Dextrose Hydrate	33.79	33.88	104.51	104.79
	19.66	41.97	51.24	109.38
	7.36	50.00	17.23	117.23
	0	54.64	0	120.46

This table shows that it is possible to prepare a saturated syrup containing the mixed sugars, of much higher concentration than one containing sucrose alone. At 30°C. (86°Fahr.) 100 grams of water are shown to dissolve only 213.6 grams of the sucrose alone, while the same quantity of water is capable of holding in solution 280.0 grams of the mixed sugars, which is an increase of 31%. Similar relationships hold for dextrose and levulose, and sucrose and levulose. As can readily be seen, then, higher sugar densities can be obtained whenever required, without increasing the danger of crystallization. What this means to the confectioner is a higher preserving action with

greatly diminished susceptibility to mould and fermentation. Also because the viscosities of dextrose solutions are somewhat lower than those of cane sugar solutions, these higher densities do not necessarily indicate excessively high viscosities, as would be the case if cane sugar were utilized alone.

This also explains why some confectionery users of corn sugar have labeled this sugar as a "doctor" and likened its action to that of corn syrup. Corn syrup, of course, contains in addition to the sugar dextrose, a large quantity of dextrines which act as "protective colloids" which prevent or at least retard crystallization. The effect of dextrines on the solubility of dextrose

is quite remarkable. It is possible to make a comparatively non-crystallizing syrup at 20°C., whose dry substance content will attain 55% of reducing sugar calculated as dextrose, the remainder being dextrines. The moisture content in such a syrup will be around 17.5%.

When a sucrose (cane sugar) solution is treated by an agent such as weak acid, an acid salt, or the enzyme "invertase," the sucrose is broken up, giving rise, by the addition of one molecule of water, to one molecule each of dextrose and fructose, or, as a mixture of even amounts of these sugars is termed, "invert sugar." Since dextrose is the end product of the action of "doctors" like tartaric acid, cream

of tartar, etc., there is no point to adding these, expecting to obtain an action similar to that produced on cane sugar. If, as is most probable, a mixture of the two sugars is being used, then the "doctor" acts only on the cane sugar. At ordinary temperatures, dextrose is more stable towards acids than levulose. A 52% dextrose solution containing .179 moles of HCl (hydrochloric acid) per liter will not show any change in composition at the end of 12 days.

Unlike cane sugar fondants, dextrose fondants are not modified by the action of invertase. If the fondant contains an appreciable amount of cane sugar, then a modification results, but this due solely to the action of the invertase upon the cane sugar. The dextrose is not acted upon. On the contrary, corn sugar retards the action of invertase, although not to such an extent as does levulose. This retardation of the enzymic action is dependent upon the concentrations of the dextrose and sucrose and also upon the temperature. This effect is not new to the candy maker, since invert sugar, having both dextrose and fructose as components, also creates it. The added effect of further dextrose which may be added in work involving invertase action would not be sufficiently pronounced to warrant special consideration by the candy maker. Euler and Josephson, Zeit. phys. chem. Vol. 132, Page 304, and Nelson and Bodansky, J. Amer. Chem. Soc., Vol. 47, Page 1624, among many others, have investigated and reported on this characteristic of dextrose and fructose.

The corn sugar of commerce, when heated alone, loses its molecule of crystal water at 60°C. (140° Fahr.), at which temperature the crystals disintegrate. It has been conclusively shown that in a chemically pure state dextrose is relatively more resistant to high temperatures than cane sugar of only comparative purity. The same holds true of their solutions. Dextrose solutions, similarly to those of cane sugar, develop less color during heating, the lower pH of the solution. High pH causes caramelization.

The majority of candy makers judge the progress of their operations by the viscosities of the batches they are working with. Judging the point to which a gum drop batch should be boiled, for in-

stance, is a matter of judging its viscosity. The same is partly true in deciding when to "pull" the candy in the making of taffy. Many more instances could be shown. In general, the replacement of cane sugar with corn sugar means a mass of lower viscosity, all other conditions (such as temperature of the batch, moisture—and consequently, dry substance—content, composition of the dry substance, quality of ingredients, etc.) being the same. This is demonstrated by the following comparative table:

DEXTROSE		
% Solution	Viscosity in Centipoises (Temp. in Deg. C.)	
	25°	50°
9.66	1.308	1.255
	1.773	1.609
18.65	2.494	2.174
27.06	3.725	3.050
34.92	5.853	4.438
42.30	9.860	6.722

SUCROSE		
% Solution	Viscosity in Centipoises (Temp. in Deg. C.)	
	25°	50°
9.66	1.313	1.272
18.55	1.794	1.678
27.04	2.616	2.299
34.88	4.073	3.344
42.21	6.825	5.114
49.16	12.701	8.560

Corn syrup, owing to its substantial dextrine content, possesses a much higher viscosity than either corn sugar or cane sugar.

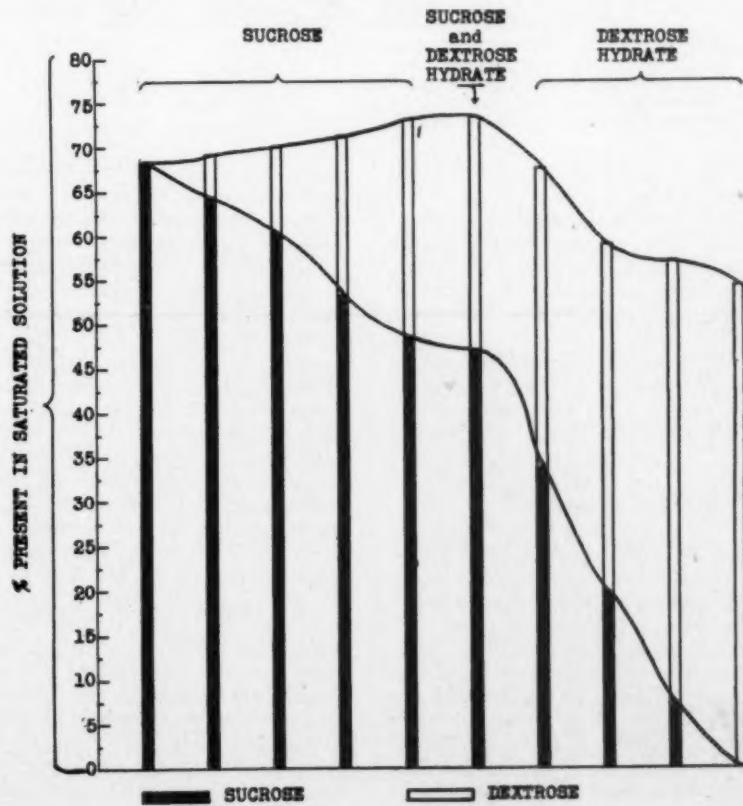
If the candy maker is not cautioned regarding these differences between the viscosities of dextrose and cane sugar solutions, he may, when he comes to make a gum drop

with dextrose as one of the major constituents, boil his batch to the same "string" which his experience has indicated to be proper for cane sugar batches. He should realize that when this viscosity is reached in a dextrose batch, he is really getting a product with a lower moisture content. This in turn means a dif-

Higher Sugar Concentrations Made Possible with Combined Sugars

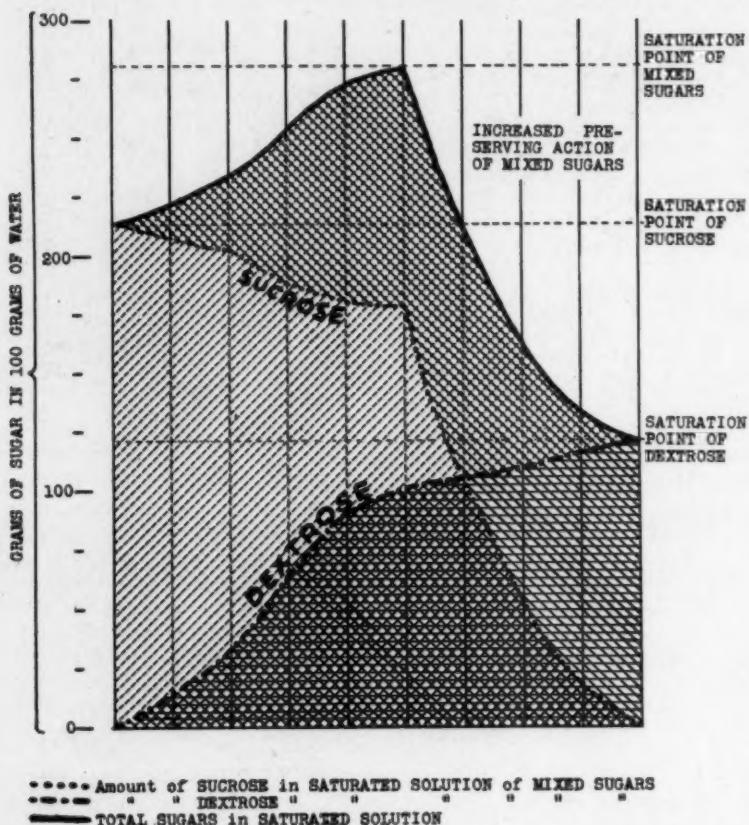
SOLID PHASE

SYSTEM: SUCROSE, DEXTROSE and WATER at 30°C. (86°F.)



REFINED DEXTROSE

Mixed Sugars Used to Give Increased Preserving Action



ference in the texture of the finished piece.

Corn sugar is much less sweet than cane sugar. There is no exact way of measuring sweetness. Usually it is a matter of individual, personal judgment. Authorities differ widely. In the December, 1925, issue of "Sugar" an anonymous author states that, considering the sweetness of cane sugar as 100, dextrose, on the same basis is equal to 72. A more generally accepted ratio of the sweetness of dextrose to sucrose is 60%.

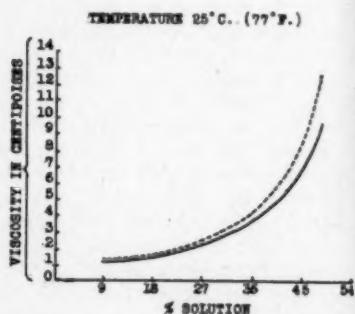
This lower sweetness of dextrose may be desirable in certain cases. Many candies have a cloying, satiating sweetness which materially limits the amount that can be eaten with satisfaction. Corn sugar in such cases makes the product more palatable. Thus it can also be said that with the use of corn sugar there is less likelihood of a "sugar-killed" effect upon the candy's flavoring materials. Dextrose also appears to

exercise a greater "fixative" action upon certain of the flavors, owing possibly to some chemical union with the flavoring compounds.

Another very important characteristic of corn sugar which the candy maker should bear in mind is the comparatively high "osmotic pressure" of its solutions. Osmotic pressure can be best defined by an illustration: If a layer of concentrated sugar solution is put at the bottom of a tall jar and the remainder of the jar is then carefully filled with water, diffusion sets in, with the result that the concentration of the sugar ultimately becomes uniform throughout the jar. The force which brings this about is osmotic pressure. It is the driving force under the influence of which the sugar (or other molecules) diffuse.

Another illustration of osmotic pressure is a jar of whole cherries surrounded by a pure cane sugar syrup of a density equal to the density of the natural fruit juice

within the cherry. This natural fruit juice, besides containing some cane sugar, has dextrose and fructose present in considerable quantities. The osmotic pressures of dextrose and fructose being materially higher than the osmotic pressure of the sucrose solution surrounding the cherry, a pressure is exerted outward by the constituents within the cherry. As a result, the juice of the cherry diffuses through the skin into the cane sugar syrup. This will occur until a state of equilibrium is reached or until the pressures are equalized. On the other hand, if we alter the composition of the outside syrup at the start so as to increase its osmotic pressure, then the tendency of the fruit juice to diffuse outwardly is lessened. This is effectively done by replacing some of the cane sugar with dextrose. A state of equilibrium can be reached by equalizing these pressures through the substitution of dextrose for cane sugar.

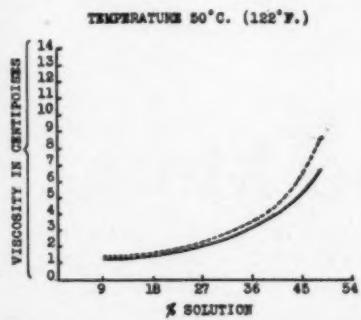


The osmotic pressure of a dextrose solution is approximately twice that of a cane sugar solution of the same concentration. One of the factors governing bacterial and yeast life is the osmotic pressure of the medium in which they are existing. The higher the osmotic pressure, the less chance is there for their development and propagation. This means that by using corn sugar in fondants, creams, marshmallows, etc., their susceptibility to fermentation is decreased and the keeping qualities enhanced. It is an additional safety factor making for inherent cleanliness.

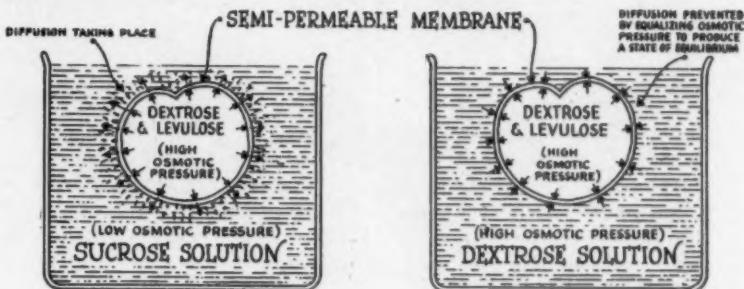
Corn sugar in the state of purity at present obtainable is a most desirable ingredient in candies. It is directly assimilable by the human system. In cases of acidosis, anemia, toxemia, and the earlier stages of Bright's disease, it is the only sugar now commercially available which does not aggravate these con-

ditions. The medical literature is full of references on its medical value. Jerome Glaser in J.A.M.A., Vol. 91, pp. 722-726; Paul Titus in J.A.M.A., Vol. 78, pp. 92; Bennett & Dodds in Lancet, Feb. 28th, 1925; Fischer, Archives of Pediatrics, November 1925, January 1925, and the work of many others clearly show the wide use and value of dextrose in certain pathological conditions. The work of Gordon & Stanley on the use of dextrose in the treatment of obesity, reported in the American Jour. of Med. Sciences, January 1928, page 37, is also noteworthy. It has been widely accepted by the medical fraternity as an important ingredient for infant feeding.

Dr. Randolph G. Flood reported in the Archives of Pediatrics, January 1925 that "Dextrose is the most readily absorbed of all sugars. It is probably the only sugar that



Preventing Flavor-Diffusion with Dextrose



passes the intestinal wall of healthy infants as such, and we believe that all the other monosaccharides must be converted to dextrose before absorption." He further states that lactose and sucrose are much more slowly absorbed. The word of Drs. W. McKim Marriott, M. G. Field, P. S. Potter, C. Stewart, and many others further attests the importance and value of dextrose as an ingredient in infant feeding.

In this preliminary discussion on refined dextrose we have only touched upon those characteristics which we have found in practical research work at our experimental laboratory at the Edgewater, N. J.

plant of the Corn Products Refining Company to be of noteworthy interest to the candy maker. In subsequent articles we will endeavor to show what changes in the methods of manufacturing specific varieties of confections these peculiar characteristics require.

There is no doubt in the minds of those who have worked extensively with the product under scientific direction but that corn sugar is destined to fulfil a long-felt want in the confectionery industry, and that the candy maker, through its use, can now obtain new effects in texture and taste which are not obtainable in any other manner.

Ensuing articles in Mr. Krno's illuminating series on the candy industry's newest tool will discuss the specific uses of dextrose in confectionery. You can not afford to miss them!

Candy Clinic (Continued from page 45.)

good. Hardly any cordial—almost all sugar.

Yellow Peppermint Cordials: Flavor good. Hardly any cordial—almost all sugar.

White Peppermint Cordials: Flavor and cordial good.

Panned White Sugar Mint: Center very good. Flavor very good.

Green Egg-Shaped Cordial: Cordial and flavor good.

Pink Peppermint Cordial: Flavor good. Hardly any cordial.

Green Midget Cordial: Flavor and cordial good.

Gum Work:
Green Opera Gums: Peppermint Flavor: Texture good. Flavor good. Crystal good.

Green String: Texture good. Flavor good. Crystal good.

Green Mint Marshmallow Center: Texture good. Flavor good. Crystal good. Marshmallow very good.

Crystallized Powdered Sugar Wafers: Color $\frac{1}{2}$ pink, $\frac{1}{2}$ white. Crystal good. Fondant good. Flavor good.

Crystallized Gum Leaf: Color good. Flavor Good. Fondant good.

Small Water Mints: Flavor good. Texture good.

Crystallized White Cream Wafers:

Flavor good. Fondant good. Sugared Green Hard Candy Tablets: Flavor good. Tablet completely grained—not a good eating piece.

Workmanship: Good.

Assortment and Layout: Very good, except hard candy pieces.

Remarks: This package is entirely up to standard and contains a good assortment. The cordials need a little looking into as nearly all of them had grained and had very little cordial. Suggest that the hard candy piece be changed to a good piece of peppermint gum or a molasses peppermint pulled piece. At \$1.00 per pound a few good "true gum" pieces might be used.

Code 7L 29

Summer Assortment, 1 1/4 lb.—\$1.00

(Purchased in chain drug store in New York City.)

Appearance: Neat and attractive. White cellophane wrapped.

Box: Wrapper—beach scene with sailboat. Colors green, white and red. Seasonable and has excellent sales appeal.

Appearance of Box on Opening: Good, pieces all in place. Niche partitions

and red cups used.

Gum Work:

Crystallized Gum Drops: Good. **Crystallized Gum Strings, Assorted Flavors:** Good.

Crystallized Cream Wafers, Assorted Flavors: Good. **Crystallized Mint M. M. Jelly, Assorted Flavors:** Good.

Crystallized Sugared Sticks, Assorted Flavors: Good.

Sugared Mint Marshmallow Cuts: Good.

Crystallized Gum Jelly Patties: Good. **Jordan Almonds:** Good.

Honey Nut Nougat, Wrapped in Silver Foil: Good.

Assorted Chewey Taffies: Good.

Green Mint Cordials: Good.

Assorted Gum Pastel Wafers: Good. **Hard Candy Fruit Balls in Cellophane Wrap:** Good.

Burnt Almonds: Good.

Assortment: Very good.

Remarks: This package of summer candies is one of the best examined this year. The assortment will suit the whole family, young and old.

The candies selected are ideal for hot weather. This is the first year this company is putting out a so-called Summer package and we understand that it is going over big.



Large bean stocks are a potential source of danger to the chocolate industry. Small current supply of a coating manufacturer is here shown in a light, well ventilated room situated at a considerable distance from all manufacturing activities.—(Staff Photo.)

Chocolate Quality and the Cacao Moth

VIII ("Chats on Chocolate")

BY ROBERT WHYMPER

(Author of "Cocoa and Chocolate" and International Chocolate Authority; writing exclusively in *The Manufacturing Confectioner*)

WHAT is chocolate? Various definitions have been given but probably the best is, "A confection made from the roasted kernels of the cacao bean, with or without the addition of naturally occurring components thereof (excluding shells), sugar and small quantities of flavoring matters." The only loopholes in this definition are the words "small quantities" and "flavoring matters," concerning which, however, enough has been said to convey to the reader what the present writer thinks about them. The omission from the formula of "a naturally occurring component", such as cacao butter, of sugar and of flavoring matters would result in natural bitter chocolate, or crushed roasted kernels or nibs freed from shell, which is seldom eaten as a confection by itself but forms the base of all sweet chocolates. The

removal of some cacao butter from natural bitter chocolate results in cocoa powder.

If, then, we start with our natural bitter chocolate or crushed nibs and add some sugar, a little cacao butter (if the whole cannot be properly moulded into a cake by some process or other), and a small quantity of flavoring (preferably finely ground vanilla bean), we obtain plain, sweet, vanilla eating-chocolate, and, if more cacao butter is added, we succeed in making covering-chocolate or "couverture." The quality of such chocolates depends upon the



THE MANUFACTURING CONFECTIONER

I feel I must apologize for the many mistakes in the article which appeared in the May issue. I am assured by the Editor that my instructions that my articles would appear exactly as written were faithfully carried out to the best of the staff's ability. But since my writing was unreadable there were two alternatives—to make the best of a bad job, or to photograph the original. The former was adopted because crossword puzzles, * and other brain-testing devices are out ...* in the M. C.

I can only regret that my manuscript was illegible and that my excuse to the readers and to the M. C. staff is so feeble a one, that the article was written immediately following a cable from the Editor which caught me in the Sahara Desert.

Yours very truly,
(Signed) R. WHYMPER.

*The assistance of our readers is respectfully requested.

Very truly,
R. Whyper.

quality of beans used, how much or how little cacao butter, sugar and flavoring matters are employed, how finely the whole mass is ground, and how the mixture is treated before being moulded into cakes or placed on candies and the like as a covering. In making the best plain chocolate today, roasting, which is admittedly of first importance in securing finest flavor if the chocolate is quickly brought from the roast to the bar as in the old days, is usually adopted for little other reason than to dry out the beans sufficiently to enable the beans to be cracked and the shells to be winnowed from the nibs. The kernels, by the various heat treatments given in later processes, are in these days made to develop their finest aroma subsequently to the roasting in most modern factories mak-

ing the best chocolates. Of this matter we shall have occasion to speak further later, but I would call attention to the fact that we are talking now of finest, plain eating-chocolates and "couvertures." Anyone

Why, Robert, We Thought We Understood You Perfectly

"I feel I must apologize to the readers of the M. C. for the article appearing in the May issue. I am assured by the Editor that my instructions that my articles would appear exactly as written were faithfully carried out to the best of the staff's ability. But since my writing was unreadable there were two alternatives—to make the best of a bad job, or to photograph the original. The former was adopted because crossword puzzles, * and other brain-testing devices are out ...* in the M. C.

I can only regret that my manuscript was illegible and that my excuse to the readers and to the M. C. staff is so feeble a one, that the article was written immediately following a cable from the Editor which caught me in the Sahara Desert.

Yours very truly,

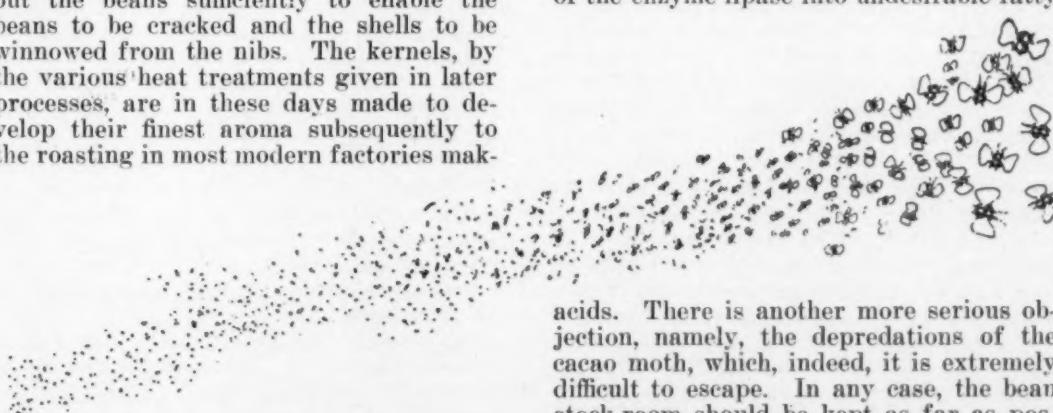
(Signed) R. WHYMPER.

*The assistance of our readers is respectfully requested.

can make the products passing for chocolates in the cheaper candies today by adopting any recipe to be found in any cook-book. The methods used for their preparation are entirely unimportant and will not be considered here.

Dangers Inherent in Large Stocks

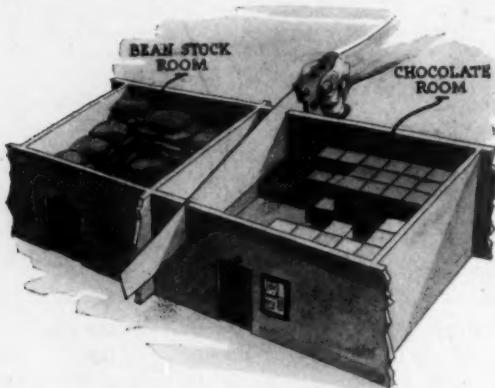
In some factories it is customary to carry large stocks of cacao beans. This, generally speaking, is a mistake, because, unless the raw beans are perfectly cured, there is a danger of deterioration from mould-formation and from rancidity of the contained cacao butter which, in the presence of moisture and air, is known to break down both by oxidation and by the action of the enzyme lipase into undesirable fatty



acids. There is another more serious objection, namely, the depredations of the cacao moth, which, indeed, it is extremely difficult to escape. In any case, the bean stock-room should be kept as far as possible from the chocolate-rooms proper and from the packing and storing departments, all of which can readily become infested with moths unless kept scrupulously clean. These moths are difficult to detect by daylight, but they fly in great numbers by

CHOCOLATE QUALITY

night and deposit their eggs on anything "chocolatey," such as old crusted chocolate on chocolate-moulds, tapping-tables and machines, in cracks in the floor, on chocolate-covered goods not yet packed, etc., etc., and later the eggs hatch out into maggots which cause horror to any consumer coming across one in a box of chocolates or candy or in a bar. For the same reason the roasting-room should not be



It is essential to isolate the bean storage rooms from other manufacturing activities. A Massachusetts firm houses its beans in a separate building, establishing contact by a conveyor system. Another safe way to store cocoa is to make it up immediately into liquor.

too accessible to the chocolate-rooms, because empty cacao-sacks are inclined to be left lying around there for an hour or two, and the maggots often crawl from the sacks onto the walls, and, forming chrysalies, later hatch out into the dreaded, night-flying moth that can do so much damage.

A Problem for Joint Discussion

Very much has been written about the cacao moth, but no one has emphasized sufficiently its danger to a chocolate factory. Here is one point that might well form a profitable discussion between grower and manufacturer, for the moth, often as not, originates in the drying-room on the plantations, in the holds of ships transporting the beans across the seas and in the warehouses by the docks. It is so serious a matter to the maker of chocolate candies that, even under cleanly conditions, the moth trouble has sometimes assumed the proportions of a calamity resulting in hundreds of boxes of chocolates being returned from the stores as maggoty—a very serious set-back to an enterprising firm, and one which cannot be offset by advertisement. I have seen maggots in chocolate bars carefully wrapped in foil, in every form of chocolate candy box and, indeed, in tins of chocolate candies hermetically sealed for the tropics, and when consulted

on these occasions, I have found the eggs of the cacao moth on foil, wrapping papers, cardboard boxes, in dust taken from cracks in the floor, on old pieces of chocolate left on dirty machines and on absolutely fresh chocolate candies and chocolate bars that had been standing exposed overnight in apparently perfectly clean packing-rooms. Though the cacao moth prefers cacao beans, chocolate, etc., on which to deposit its eggs, it is far from particular when the egg-laying craze is upon it, and it will choose the nearest material to hand.

Isolation of Bean Storage Rooms

I am not exaggerating the dangers of the cacao moth nor the horrible results following an epidemic—I have seen too much of it and its objectionable ways. It is, then, with genuine earnestness that I recommend isolation of any department in which raw cacao is handled from rooms in which chocolate is made. Roasting destroys the cacao moth—damp heat around 100° C. will quickly kill even the eggs—but, if the roasted beans are left standing overnight in a room containing even one moth, the chances are that some hundreds of eggs will be deposited on their surface, and the room in which the beans are nibbed and husked will be liable to contamination if any of those eggs fall into some undisturbed part of the machine. So the moth may and does penetrate from one room to another unless the most scrupulous care is taken.

Disinfection, provided the smell of the disinfectant does not harm the flavor of cacao, is always valuable in keeping down this pest; frequent lime-washing or painting of walls and ceilings and especially cracks and corners is also valuable; absolute cleanliness of all machines is essential; and free use of vacuum cleaners on floors, ceilings and walls is to be recommended. Everyone in the factory should be instructed to kill a moth on sight and to report the fact as soon as possible.

Some reasons have been given them why beans should be roasted shortly after receipt in the factory, and the temperature of roast should be at least high enough to kill the eggs of the cacao moth for whatever purpose the kernels are to be subsequently employed. Incidentally, the bitter chocolate resulting from grinding the roasted, nibbed and husked cacao (i. e., ground roasted nibs) can be blocked in large 50 lb. blocks and stored in a clean, cool room without deterioration, first, of the cacao butter through moisture and oxidation, and, second, of the chocolate from the depredations of the cacao moth.

(To be continued)

Do You Want to Stay in Business?

*From Address Delivered Before 46th Annual Convention
of National Confectioners' Association of West Baden*

By F. J. NICHOLS
Sales and Marketing Counsel

Do you want to stay in this business that you are in? Gentlemen, the situation in America today is such that if you are going to stay in business you must make bigger profits than you are making now.

I did not see these figures* that are in your hands until I came into the room this morning but they confirm the general impression that while your tonnage has increased, the price received for your candy has decreased. You know what that means. That kind of a condition cannot go on, whether in your business or any other, and your business is not alone.

What is wrong? It can all be summed up in the one word—changing conditions.

Just to remind you as a background what some of these things are: In the first place, you, as manufacturers, are no longer in the saddle. Time was when you could make what you please and force it on the retailers of this country, to stay in their stores if they couldn't sell it—but it doesn't stay there these days, does it? It comes back to you.

The Consumer Is in the Saddle

Today the consumers are in the saddle, piping the tune. If you want to dance, you will dance their tune. If you don't, you go down and out. They have new wants, and minds of their own. They are more intelligent, more discriminating; tastes are refined and are being refined still more almost daily...

I was at the New England Ice Cream Manufacturers convention a little while ago and they did a thing I'd like to recommend to you for next year's convention. Get a woman on this program to tell you what the women want. They are spending 95% of the money we make. *They know what they want.*

The President of the Federation of Women's Clubs of New York said, "Gentlemen, we are tired of

*U. S. Dept. of Commerce Candy Distribution Survey.



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this poor ice cream. What we want is better ice cream." A man back in the audience said, "Don't you know it will cost more?" Instantly she replied, "Don't you know we've got the wherewithal with which to buy it? Give us what we want!"

And that is what America wants today in foodstuffs of every description, better, better, BETTER!

What are we doing? We are trying to make it cheaper, cheaper, CHEAPER! So you see they don't fit.

The third thing I want to say, gentlemen, is that this is a day of mass production. Machinery is taking the place of human hands. We have lower costs because of the use of machinery. We have newer methods, research and necessarily obsolescence.

What Have You Scrapped?

You can judge a candy factory by the amount of stuff it scraps. Some of you haven't scrapped any machinery or methods for a good many years, have you? . . .

This is also the day of a new kind of distribution. The old storekeepers are passing very rapidly—

dying like flies—going out of business by the thousands and fortunately not being replaced in many cases.

We have too many retailers, as we have too many wholesalers, jobbers, manufacturers and almost everything else. We speak about these *chains*. We say right off the bat the minute we speak of change in distribution that it's *chain stores*. We like to hang all the blame there, but not long ago I saw an editorial in a financial paper. This was the title: "NOT THE CHAIN BUT THE CHANGE," in conditions and methods and demands.

The fifth change is the trend toward bigger business units. Dislike it as we will, that is the trend in America today. Let me give you some figures. An analysis made for an entirely different purpose by Dr. Starch of Harvard University, develops these rather startling facts: He found that in America today there are 2,260,400 businesses of every kind from a peanut stand up to the biggest railroads. The line that divides big from little in all of these businesses was not a million dollars volume a year; it wasn't half a million dollars a year; it was seventy-five thousand dollars sales per year dividing the big from the little business in America that likes to talk big.

The Big Shall Get Bigger

How many businesses out of those two and a quarter million would you say were doing more than seventy-five thousand dollars volume a year? . . . Three and eight-tenths per cent of them, or eighty-five thousand, seven hundred and sixty businesses out of two million are doing seventy-five thousand dollars a year. I wonder how many candy manufacturers are in that class—how many candy jobbers are doing more than seventy-five thousand dollars a year. I know there are mighty few retailers that are doing it.

How much total business do these eighty-five thousand concerns



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have? Well, out of all the business of America they have 96.2%. Question the figures, say they are all wrong, dilute them fifty per cent if you want and if you haven't got a startling situation, I'd like to know where you will find one.

Gentlemen, there is the evidence that the trend in America today is toward the bigger units. Back that up with the fact that in the chain store organizations they are definitely working to take over additional stores and increase the volume per outlet; go into factories all over this country and you will find merger, get-together, cooperation in the air—forcing the banks to get together in order to finance these bigger business structures.

"Taps" for the 2x4's

In a business like yours, in the furnace business, in the coffee roasting business and a lot of others, what hope is there for these little two-by-four institutions to go up against a situation like this when the trend is definitely toward the bigger business? . . .

Most American business men, yourselves included, are thinking of volume of business rather than the amount of profit you make. You are saying, "If we can just step up our sales each week, each month, each year, beyond last year—somehow or other there is some magic in the process that will enable us to make more money."

But this report is conclusive, isn't it, that it does not always work? Here is what has been going on in America the last few years. (Mr. Nichols draws chart of curves on blackboard.) Our sales curve has been going up like this; the cost of selling has been going like that, and when we were back here, we had good profits; then we came out of this place and because the selling cost was increasing faster than the sales curve was going up, profits were decreasing, and today for a great many businesses we are in an era when we are in the red because we have had our eye on volume. We have been working on the principle that if we can only sell more, our production curve will go like this.

Plant Capacity no Key to Profits

It does, but the cost of selling the surplus production is so excessive that it wipes out the profit and shoves the business into the red. It is true in your business as it is true in one business after the other

across this country, and there is the problem, gentlemen. There isn't time to solve it here this morning except to point this out: That the cost of raw materials and the capacity of your plant do not determine how much candy you should make. But today when sugar and chocolate and everything else is down in price, we think that if we can just boom twenty-four hours a day we will make some more money. The evidence is all against you. The thing to do is to start out here among the

"You can judge a candy factory by the amount of stuff it scraps!"

—F. J. Nichols.

consumers: How much of this can we sell at a profit and make that much? (Applause)

You can't sit down and guess about it. You can't dream about it. You've got to get the evidence and that is one reason why I am tremendously interested in these programs of research that you are discussing.

For my seventh point in changing conditions in America today, gentlemen, is this: That research is the basis of all profitable business operations: Manufacturing, jobbing and retailing in this country today.

I was talking to the sales manager of a big department store the other day. I said, "What do you do when a department doesn't pay?"

Soft-Pedalling the Losers

He said, "We soft-pedal it. We get down inside of it and we find out why." He said, "The trouble is that too much that is called research is made up of two guesses and one fact. When you get all the facts, you can call in almost anybody out of the store and they will tell you what to do."

I said, "That is quite different from the old days when if a department wasn't paying—if we were spending three percent for advertising, we'd spend 5%. Then we'd spend 10%, without stopping to find out why."



[54]

Today they get down inside to find out why. For conditions—demands—style—are influencing everything. Not only research in raw materials and in your manufacturing and production procedures, but if you are going to make any money in this candy business in the years that are ahead, it is absolutely necessary that you add research in the merchandising or marketing end of your business.

Why? Because we are just on the threshold of a new era when we shall have, through the Census of Distribution that is going to be taken next year with the other census, data about distribution for the first time in the history of this country and those businesses that are getting ready for it, that know how to use it, will get the business of the future and those that say "It's just some darned fool idea" will wonder what is the matter with them.

Lessons from the Louisville Survey

As a preliminary to this general census of distribution, the Government took a census of distribution in eleven selected cities and very quickly I want you to look at some charts. Here is what they found about commodities. Here are the commodities, the total sales, the percentage of the total in these eleven cities which are a good cross-section of the country:

Food heads the list, 28.5%—all kinds of food.

Clothing next with 24%. Automobiles third with 12%.

Here is a division of the food business:

Groceries and delicacies	33.5%
sens	33.5%
Confectioners, ice cream and soft drinks combined in this study but separated in the big one that will be made.	8.2%

So that gives us the base to apply when we go into a food store or face up to figures on a community's food bill. About 8% represents candy, ice cream and soft drinks. How it divides we will be able to tell you by the first of July.

Where are candy, ice cream and soft drinks being sold in these eleven typical cities? Well, I have dug this out: Here they are, in twenty-eight different kinds of business. Will you tell me why an art and antique shop sells candy? Will

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you tell me why a hardware store sells candy? Or a filling station? Or a toys and games or musical instrument and motorcycle store? Twenty-eight kinds of stores, a total of twenty-two thousand outlets for candy in those eleven cities, five of them worth talking about and they are these, in this order:

Candy and confectionery stores, so-called 7,300
Grocery and delicatessens.... 6,900
Drug stores 2,900
Cigar and tobacco shops..... 1,900
Restaurants 1,430

We could forget all the rest, for these can do the candy business of the country.

The Mad Race for Outlets

One of the problems is that in this fight for volume we are putting our candy on sale in every possible kind of an outlet regardless of the quantity that they can sell and regardless of what it costs us to have it sold there. By cost I mean not only your cost but the cost of having the stuff go bad and selling stale candy.

The Government broke down these figures still further and they gave us the volume done in different groups of stores. We found that there are a great many stores selling less than \$5,000 worth of merchandise a year. That is \$96 a week or \$16 a day. For the stores that are selling candy, look at this:

Cigar and tobacco stores, 41% are selling less than \$5,000 a year. In confectionery stores, it is 55%—the worst figure on the map.

Drug stores, 8%—and there you see the effect of education. Two years of college, two years of pharmacy school is the minimum requirement in most of our states, and that figure comes down to 8%; they can push a pencil and use their heads.

Dry goods, 30%.

Fruit and Vegetables, 5%.

Gas stations, 32%.

General Merchandise, 20%.

Groceries, 27.5%.

Restaurants, 25%.

Variety stores (5 & 10's, that is) 20%.

These stores average around 35%, or one out of every three is doing less than \$5,000 a year business. What is the volume of candy business that they are doing? Look here:

8%, 11.6%, 1%, 2.5%, 6%, 5%, 1%, 4%, 2%, .5%.

Every Sale a Loss

Gentlemen, every last sale there is probably being made at a loss, a loss to you as manufacturers, a loss to your jobbers, a loss to these retailers who could all get more money if they worked for somebody else for \$25 a week, and a loss to the community and the nation. In other words, these small stores, these unprofitable outlets, are a liability to this country as well as to your business.

But you men, like wholesale grocers and other wholesalers around the country, have been working on the principle that if you could just get your candy in every possible outlet, everything would be lovely.

"I was talking to the Sales-manager of a big department store. I said, 'What do you do when a department doesn't pay?' He said, 'We soft-pedal it. We get down inside of it and we find out why. The trouble is that too much that is called research is made up of two guesses and one fact. When you get almost anybody out of the store ALL the facts, you can call in and they will tell you what to do!"'

—F. J. Nichols.

Now just wait a minute! If we could do that we'd have bigger volume, wouldn't we? But we know now that bigger volume does not reduce the production costs enough. It does bring down the production cost but not enough to make up the loss on sales to these small unprofitable dealers. Think that over while you're playing golf this afternoon!

Do you know how many unprofitable dealers you have on your books? Or how many your jobbers have? And it's the same thing. I wonder sometimes whether you candy men are thinking straight when you constantly remind us that "We are in two classifications, some of us selling directly and some selling through jobbers." You are all in the same boat for in the last analysis you make or break on what happens out in those retail stores and if you are selling through jobbers to them, then I'd say your job is to control what those jobbers are

doing. The jobber is your representative in that contact.

A Few do all the Business

Now let's look at the other side. What is the constructive side of this picture? Take the five big ones and we find that one-tenth of the drug stores are selling a third of the goods. Put on top of that one-fifth of the confectionery stores are selling two-thirds of the goods. 57% of the groceries are sold by 18% of the grocery stores. One-fourth of the restaurants sell three-fourths of all the meals that are eaten in restaurants, and two-thirds of the tobacco shops sell only one-fourth of all the goods—or to turn it around constructively, one-third of the tobacco shops sell three-fourths of all the tobacco.

Under those conditions I'd like to ask you, then, why we fool with all these—to get that? That is what we are doing, in your business and every other.

Your Problems and Louisville's the Same

We have these figures for eleven cities. I wonder how many of you have ever looked through that report. I wonder how many of you have ever had your sales department analyze the report in relation to candy, to your own territory. Apply these percentages to your figures and don't tell me that they don't fit.

The thing I hear more often than anything else getting around the country is, "Well, this is a peculiar business in a peculiar community. Those things don't apply here."

We have made enough tests in particular places of all kinds and sizes to know that the variation is a fraction of one per cent and it isn't worth the money and effort to find out what that fraction is.

So take these principles and apply them to your business for, gentlemen, you have three years of grace. In 1932 we shall have these figures on every community in America for every kind of outlet. You've got three years in which to learn how to merchandise scientifically. For that reason I am saying this: That the industries, the individual business men who don't wake up and change, are doomed. In five years you will be out, because your business will go to the ones who merchandise on the basis of absolute scientific facts. There isn't

DO YOU WANT TO STAY IN BUSINESS?

any choice. It is a serious situation—for you and the nation. We are up against it; we are into it; we've got to face it and make some decisions.

What the Louisville Survey Is

This Louisville Food Survey is simply a refinement of this process. The Government wanted to follow through some commodity in one market, in all of its aspects. The Louisville food people were organized better than anybody else in the country, took the initiative, asked to have themselves studied, offered themselves as a laboratory in which to find the facts. The Department of Commerce went down there with their experts and began to probe around and get the facts and I want to bring you a few of them. Unfortunately I can't bring you much in the way of data on candy because the study is only 45% finished and candy hasn't been worked out.

However, we have gone far enough in it to know this: That candy is just about like all the other food products. So if I talk about coffee or potatoes or something else, you will find that it is just about the same.

In the first place, they made a census of distribution. They came armed with blanks to cover two thousand outlets. They needed 3,200. In a city of 360,000 people there are more than 1,200 grocery stores alone. We don't need them. We know now that if we had 300 grocery stores we'd have enough to serve that community better than it is now being served; every owner of those stores would make more money than he is making now; every wholesaler and manufacturer who is contacting him would have a profit instead of being in the red as all but two of them are now.

Survey Stirs Local Candy People

I have had a session with the Candy Club of Louisville. They are tremendously interested. They are getting into things as are other people. The first thing that was done following that census of food distribution was to find out how many stores we would have to have to get a fair cross section of that industry and they found they need 28, scattered in all kinds of communities from the best to the worst; volume of business running from \$2,500 to \$150,000; with different types of men running them.

The first thing was to take an inventory in these 28 stores, done under Government supervision by the wholesalers' salesmen, and they learned some things.

Then cost and operating expense accounting was set up, the figures handled for both inventory control and expense records in the Department of Commerce office—not in the grocery store—so it is the first controlled study we have had anywhere. It isn't somebody's guess or what we want to hand out.

What are we finding? Just briefly

let me give you two or three things, gentlemen. We find that the food bill for Louisville last year was \$38,000,000 at retail. 35% of it was done by the chain stores, and that surprised them; everybody thought it was about 45%. Ten wholesalers are being studied. A credit study was put on. They took forty stores and studied them, stores that were supposed to be bankrupt. These ten wholesalers and other manufacturers were visited. We asked, "Are you selling these forty stores?"

IN LOUISVILLE—Where a food industry called the doctor.

(These are the inventory cards used by the U. S. Dept. of Commerce in making a typical survey of food merchandising to find out what's wrong with the industry.)

Tomatoes				Red Gold 2			
(DEPARTMENT)				(BRAND)			
can							
RECEIPTS							
INVENTORY	DATE	QUAN.	UNIT PRICE	DATE	SOURCE	QUAN.	UNIT PRICE
12-6 1835		105.64					
		66.28					
Peaches				Kallbreier			
(DEPARTMENT)				(BRAND)			
can							
RECEIPTS							
INVENTORY	DATE	QUAN.	UNIT PRICE	DATE	SOURCE	QUAN.	UNIT PRICE
1-1 2-1		14.69		1-4		24	20
Peaches Half				Del Monte			
(DEPARTMENT)				(BRAND)			
can							
RECEIPTS							
INVENTORY	DATE	QUAN.	UNIT PRICE	DATE	SOURCE	QUAN.	UNIT PRICE
2-6 32		6.00		1-9		106	24
Kallbreier				Lux			
(DEPARTMENT)				(BRAND)			
can							
RECEIPTS							
INVENTORY	DATE	QUAN.	UNIT PRICE	DATE	SOURCE	QUAN.	UNIT PRICE
12-6 75		14.69		1-4		24	20
Soap, Toilet Bar				Kallbreier			
(DEPARTMENT)				(BRAND)			
can							
RECEIPTS							
INVENTORY	DATE	QUAN.	UNIT PRICE	DATE	SOURCE	QUAN.	UNIT PRICE
12-6 67		6.97		12-11		50	.07
Kallbreier				Sandwich Spread			
(DEPARTMENT)				(BRAND)			
jar							
RECEIPTS							
INVENTORY	DATE	QUAN.	UNIT PRICE	DATE	SOURCE	QUAN.	UNIT PRICE
12-6 80		6.00		1-2		50	.07
Kallbreier				Wrights			
(DEPARTMENT)				(BRAND)			
jar							
RECEIPTS							
INVENTORY	DATE	QUAN.	UNIT PRICE	DATE	SOURCE	QUAN.	UNIT PRICE
12-6 8		.18%		12-21		6	.18%
Kallbreier				Maxwell House 1 lb			
(DEPARTMENT)				(BRAND)			
pkg							
RECEIPTS							
INVENTORY	DATE	QUAN.	UNIT PRICE	DATE	SOURCE	QUAN.	UNIT PRICE
12-6 55		25.85		12-11		24	.47
Kallbreier				Kallbreier			
(DEPARTMENT)				(BRAND)			
jar							
RECEIPTS							
INVENTORY	DATE	QUAN.	UNIT PRICE	DATE	SOURCE	QUAN.	UNIT PRICE
12-6 40		18.80		12-20		24	.47
Tomatoes				Red Gold 2			
(DEPARTMENT)				(BRAND)			
can							
RECEIPTS							
INVENTORY	DATE	QUAN.	UNIT PRICE	DATE	SOURCE	QUAN.	UNIT PRICE
12-6 1835		105.64					
		66.28					
Peaches				Kallbreier			
(DEPARTMENT)				(BRAND)			
can							
RECEIPTS							
INVENTORY	DATE	QUAN.	UNIT PRICE	DATE	SOURCE	QUAN.	UNIT PRICE
1-1 2-1		14.69		1-4		24	20
Peaches Half				Del Monte			
(DEPARTMENT)				(BRAND)			
can							
RECEIPTS							
INVENTORY	DATE	QUAN.	UNIT PRICE	DATE	SOURCE	QUAN.	UNIT PRICE
2-6 32		6.00		1-9		106	24
Kallbreier				Lux			
(DEPARTMENT)				(BRAND)			
can							
RECEIPTS							
INVENTORY	DATE	QUAN.	UNIT PRICE	DATE	SOURCE	QUAN.	UNIT PRICE
12-6 75		14.69		1-4		24	20
Soap, Toilet Bar				Kallbreier			
(DEPARTMENT)				(BRAND)			
can							
RECEIPTS							
INVENTORY	DATE	QUAN.	UNIT PRICE	DATE	SOURCE	QUAN.	UNIT PRICE
12-6 67		6.97		12-11		50	.07
Kallbreier				Sandwich Spread			
(DEPARTMENT)				(BRAND)			
jar							
RECEIPTS							
INVENTORY	DATE	QUAN.	UNIT PRICE	DATE	SOURCE	QUAN.	UNIT PRICE
12-6 80		6.00		1-2		50	.07
Kallbreier				Wrights			
(DEPARTMENT)				(BRAND)			
jar							
RECEIPTS							
INVENTORY	DATE	QUAN.	UNIT PRICE	DATE	SOURCE	QUAN.	UNIT PRICE
12-6 8		.18%		12-21		6	.18%
Kallbreier				Maxwell House 1 lb			
(DEPARTMENT)				(BRAND)			
pkg							
RECEIPTS							
INVENTORY	DATE	QUAN.	UNIT PRICE	DATE	SOURCE	QUAN.	UNIT PRICE
12-6 55		25.85		12-11		24	.47
Kallbreier				Kallbreier			
(DEPARTMENT)				(BRAND)			
jar							
RECEIPTS							
INVENTORY	DATE	QUAN.	UNIT PRICE	DATE	SOURCE	QUAN.	UNIT PRICE
12-6 40		18.80		12-20		24	.47
Kallbreier				Kallbreier			
(DEPARTMENT)				(BRAND)			
jar							
RECEIPTS							
INVENTORY	DATE	QUAN.	UNIT PRICE	DATE	SOURCE	QUAN.	UNIT PRICE
12-6 55		25.85		12-11		24	.47
Kallbreier				Kallbreier			
(DEPARTMENT)							

THE MANUFACTURING CONFECTIONER

"Yes."

"Do you know they are in the red?"

"Yes."

Fighting for Privilege of Losing Money

But still they were fighting for that business. Out of the whole outfit one wholesaler made up his mind he'd cut off those forty stores. Since the study was made some half a dozen of them have closed their doors. The one who cut them off is the only one who has gotten his money.

The bankers are tremendously interested because they say "We begin to see now why food manufacturers and wholesalers are always borrowing so much money and have so hard a time to pay it back."

A record has been kept in Louisville over a period of three years of grocery failures and new stores opening up. Here it is: An average of 30 stores a month have gone out of business during these three years. That is 360 a year, isn't it? That is 1,080 in three years out of 1,200 stores. Some of these stores, gentlemen, have changed hands every month, and every time they change hands you and other people lose money in the operation.

While this was going on, an average of 32 new people went into the food business in Louisville every month, many of them put in business by manufacturers and wholesalers, men who had \$100 or \$500 or \$1,000, street car conductors, taxi drivers, garage men, farmers, locomotive engineers and whatnot, thinking anybody could run a food store. Of course, they will last a while and then go down and out.

Louisville Cured on "Easy" Credit

That kind of thing has GOT TO STOP! Today, no food manufacturer, wholesaler in Louisville, will even talk to a man who hasn't capital enough to set up the right kind of a store. You ask, Mr. President, how we are going to put them out of business. They are putting themselves out. All we have to do is discourage these fellows from going in and in three years you will have a 90% exit from the business by just a natural process.

If you tighten up credit terms, you can speed that up to fifty or sixty a month very easily. Look down over your books. Look over

your jobbers' books and you will see the story there. Why do we do it? To get volume. Because we are volume mad we are getting the volume at the cost of profit.

Now look at some of these inventory figures. You are interested in inventories because your candy has got to be fresh and in good condition. Here are two stores. One does \$115,000 volume; the other \$25,000. This man sold \$115,000 worth of goods with a \$3,000 inventory while this other one who sold a fourth of the volume had to have a \$3,500 inventory. This first man turned his stock 37 times; that one 7 times. There's the difference!

This man made more money than



J. W. MILLARD
U. S. Dept. of Commerce, Director
of the Louisville Food Survey

anybody else in the retail grocery business in Louisville last year and this man didn't get a red cent out of it except about \$25 a week that he called salary. And there you've got the story, gentlemen, in all these 28 lines of business—excessive inventories, excessive operating costs. The carrying cost on this is five times the cost of carrying that merchandise.

Fewer Items Making More Money

And that operates in your own warehouses, too, remember. Take number of items. Here is a store with 1,700 items. Here is one with 2,620. Both of them are doing about the same volume of business. Alongside both of them are chain

stores, this one with 700 and this one with 800 items, and in both cases the chain stores are selling more merchandise than these fellows with two or three times the number of items.

Look at equipment:

Scale, 1886,

Cash register, 1888,

Refrigerator, 1893,

and we have found shelving that was built in those grocery stores before the Civil War still being used. And in helping to inventory those stores from off the shelves and under the counter I personally have brought out merchandise that we couldn't tell what it was. We'd call the merchant and ask, "What is this?"

"Oh, that's tobacco—spices—those are cakes, canned goods; they are extracts."

"How long has it been here?"

"They were here when I moved into the store."

"How long have you been in this store?"

"Twenty-two years."

And they call it business!!

What would happen to candy if it were there twenty years?

Retail Candy Badly Merchandised

Gentlemen, two things stand out. One is the meat department as being bad and the other is the candy department as being rotten. In no single one of these 28 stores (and I have been in them all) prior to the starting of this thing was there a candy display worthy of the name. It was all rumpled up old stuff, dirty stuff, with lack of prices. You know what they are. You get in and out of those stores—or ought to. Nothing attractive. Candy is bought where people see it. We don't go to the grocery to buy candy. We don't get in the car and drive three miles to buy candy very often. We buy it because of the impression when we see it, and that is the reason why these awful cases need to be cleaned up.

I wish you'd see some of the messes we have unearthed and got them to change.

What also have we found down there? Well, let me show you some figures out of a wholesaler's business. That comes a little closer home to you. Here is a wholesale grocer doing \$640,000 worth of business last year. His net profit was \$812. Here is the volume of his business by customers—number of customers, size of purchase for the

DO YOU WANT TO STAY IN BUSINESS?

year and percentage of the volume. Look here:

22% of his customers bought less than \$25 during the whole of last year. To get these data the Department of Commerce has run through tabulating machines 156,000 orders, breaking them down by commodities, prices and everything else. You see it's some job!

Those 22% represent 1% of his business. 52% of his customers bought less than \$100 all of last year and represented 12% of his volume. Down here are 3% of his customers who bought over \$1,000 last year, and gave him 20% of his business. He lost money on all these at the top; he made money on these down here. Wouldn't you rather operate on the 48% of those customers that give you 88% of your volume and stay out of the red?

Breaks Even on \$7.25 Per Order!

Here is another chart. The same story. This is his country business (the other was city); 61% from the country under \$100—19% of his business. 7% of them down here, over \$1,000, and give him 16%.

(Next chart): This is interesting because it is sales volume in relation to the size of the individual order. In the city 44% of this wholesaler's orders were in amounts under \$5 apiece. He *breaks even* at \$7.25 per order. He didn't know it then. That made up 15% of his business. 1.4% of his orders were over \$100 and 1% from \$50 to \$100 gave him 15% down there. Would you rather have this 1.4% or have the 44%?

78% of this wholesaler's orders came in amounts under \$10 and gave him 42% of his city business, while in the country 50% of his orders were under \$25 and gave him 20% of his volume.

Now gentlemen, if you break even on handling orders at \$7.25, what would you do when you found out that more than half of your business was putting you in the red? I'll tell you what this man did. On the first of May he issued an order that no order under \$5 would be honored. I asked him Monday afternoon how many customers he had lost. He said, "We have lost by that process 87 customers."

"What has happened to your sales volume?"

"It has gone up \$3,000."

"Why?"

"Because the time which our salesmen spent calling on those 87

unprofitable dealers has been spent in the best stores they call on, with the result that we get bigger orders from them."

Salesmen Put Time Where It Pays

And there you have the secret, gentlemen. It is not a question of how many customers a salesman calls on but what happens while he is in the store. If you require a salesman or a jobber requires himself or his salesman to call on thirty, forty, fifty places a day, all he can do is grab a few snatches of orders.

I'd like to commend for your careful study the process that Du Ponts use. I heard O'Toole, the Western Sales Manager, describe it just last week in Chicago in a meeting when he said, "We require every one of our salesmen to choose the best store in his territory and spend a whole day in that store every week. The result is that we are increasing the sales by leaps and bounds in those best stores."

Let's apply a little mathematics to that. Suppose you get one of these stores that is selling \$6 a day—and there are a lot of them that you're doing business with according to these figures that are selling \$6 worth of goods a day; suppose you increase that 10%. What would you add? Sixty cents, wouldn't you?

All right. Here is another store that is selling \$600 worth of goods. If I only get 1% on that, I've got \$6, haven't I? And, gentlemen, it's easier to get 25% increase in these bigger stores than it is to get 2% in the little ones. The trouble is, we haven't got any salesmen in very many places selling candy. Your candy is being peddled by order takers who don't know their goods and who know nothing about merchandising.

Candy Salesmen Untrained

Why do I say that? Because I've been on the inside of some of your businesses and gone out on the road with them and listened to what they have said. I have picked out fifteen or twenty different kinds of candy that they have had in that business for ten years and pasted paper over the labels and given them sheets of paper and said, "Tell me the name and tell me the price," and you get about 40% grade on the operation.

I have gone into stores with them and listened to them plead with some two-by-four little hole-in-wall

dealer to take a box of something at a cut price—simply wasting their time and yours. You are losing money on every last one of those transactions, gentlemen, but you don't know it.

These people down here in Louisville didn't know these figures until the Government came along and showed them and they said, "There must be something wrong. They can't be right." And they have been checked and re-checked and they are right, whether they like to look at them or not.

When you find you are losing money on half or two-thirds of the orders you are taking, there's just one thing to do: Stop taking them. In order to get bigger ones, we've got to grow a generation of salesmen who can go into these stores and not only fix up those candy cases and clean them out personally, but talk to that merchant intelligently, effectively, about how to sell more and better candy at a profit to himself and you. For, gentlemen, unless that dealer makes a profit, he isn't going to be interested in candy.

We know candy is profitable in grocery stores and in other places. I have here a record from one of the men in the Department office in Louisville with these figures. These are figures for the first 13 weeks of this year under control.

Store A—\$99 sales; \$45 worth of candy.

Store B—\$1,100 sales; \$24 candy.

Store C—\$30,000 sales; \$290 candy, and he makes 30% gross.

The first one made 27%; the second one 34%. That means there is a nice net profit for those dealers in candy.

Cost of Service Higher Than Sales

But, gentlemen, what is \$25, \$50, \$290 worth of candy in thirteen weeks? It means that you are going in the red in putting candy into those outlets. Why do I say that? For this reason: We have kept records and here in some stores for a period of a month the average sales of everything in those stores amounted to \$7.20 per day for that month. The time of the salesmen who called on those stores was computed, the cost was figured and the cost of calling on those stores per day was \$7.80. In other words, the manufacturers and jobbers of Louisville spent 60 cents a day more in those stores than the sales amounted to.

THE MANUFACTURING CONFECTIONER

Here are some other figures: In order to sell one dollar's worth of merchandise to these retail outlets, it cost

72c
97c
\$1.07
\$1.28
\$1.79

to sell one dollar's worth of merchandise. The cost of the merchandise, the overhead in the factory, the depreciation and insurance and all the rest of it isn't in that figure. That is selling cost only. I wonder what it would be in some of your businesses. I know you don't know. It never has been dug out. But you will find the situation just as serious.

Chop Them Off

Let me sum that up this way: *Today it is costing too much to sell, deliver, service and collect in order to do business with about one-third of the retailers in business.* My recommendation is that you find out as an industry and for your own business what it is costing you to do these things and then send for De-Wolf Hopper's great big knife that he used to wield and chop them off. You will benefit yourself and them.

You say, "What will happen to the poor dealer?"

Maybe he will drive a taxicab and make twice as much as he is doing now.

Let's go a step further. I can't show you candy, but here are some coffee figures which are about the same. Here's a coffee roaster in Louisville. He has 15 blends and 27 brands. The only thing wrong with these figures is that for you we'd have to add a cipher. (Laughter.) I know one fellow who is making over 600. I remarked about it this morning and he said, "Why, that's nothing. One man is making over 6,000." Priding himself on it!

This man was very much surprised when he found that 79% of all of his coffee business, the bulk business, came from five of his brands of coffee. I wonder if that isn't true in your business—that some five or ten or twenty pieces that you are making will give you 50%, 70%, 80% or as high as 92%. I found in one factory 92%—and all the rest of them losing you money.

We Use Up Our Old Boxes, Too

Here is his package business: 16 different brands, 3 of them giving him 79.5% of all his business, and in this place I asked him why he

didn't cut off one of these. He said: "Well, we have about 30,000 bags upstairs printed for that particular brand and we'd like to use them up."

I said: "How much are you losing on that brand?"

He was afraid to tell me, but it was a whale of an amount of money. Every time he sold a pound he went in the red 17 cents, but in order to use up some paper bags that five years ago had cost him a couple of hundred dollars, he wants to continue to sell 30,000 pounds more to the tune of 17 cents every time he does it.

Some of you birds are doing identically the same thing. Why do you do it, gentlemen? You come to a convention, and you sit at your desk and you write articles raving and wailing about the lack of profits and then go on doing these foolish things.

I can't come into your business and change it. There is no man anywhere can change it but you, but if you've got nerve enough to go back and just close your eyes and issue an order and say, "Cut off the last twenty-five of them," you will be in better shape.

Grading the Dealers

What is the way out? Here it is: Work with selected dealers to increase their business. Pick and choose. Take the good ones. Take the big ones. Take the ones that will do what you want them to do. That means, of course, classifying your dealers, and here is what is being done in the ice cream business: Four classes—A, B, C and D. The first is profitable, future is good. Spend most of your time helping them to increase. The second is unprofitable. They can be developed. Work with them. The third is los-

ing money now, no good in the future, cut them off. The fourth is losing money now, the future is poor, but it may be some distinctive restaurant, some particular shop where it is to your advantage to have it known that your candy is being sold there. Sell as little as possible—just enough to let it be known that they are handling your product.

Why do I say as little as possible? For this reason: I don't know what it costs you to do some of these things, but we know now what we didn't know last June—that you can't sell less than 450 gallons of ice cream to a dealer who is half a mile from your plant without losing money.

I know one firm that fought last year to increase its sales of ice cream to more dealers, spending \$30, \$40, \$80, \$100 to put an ice cream cabinet into that place, and at the end of the year their average loss on those dealers was \$78.34, and the same thing is true in your business, gentlemen.

Measure 'Em Up

Here is a yardstick that has been worked out to test dealers so that you can select them. The possibility of growth, 70%—rated this way:

General business ability of the man in the store.....	20%
Personality	10%
Location of the business.....	10%
Cleanliness and appearance.....	10%
(and some people say it ought to be given 30%)	
Quality of other products in addition to your own.....	10%
Prompt pay	10%
Effect on other profitable stocks.....	10%
Prestige of serving.....	10%
Miscellaneous	10%
	100%

Cut off any dealer who doesn't rate 50% on that scale. If you

A Score Card for the Selection of Dealers:

General business ability	20%
Personality	10%
Location of Business	10%
Cleanliness and appearance	10%
Quality of surrounding products.....	10%
Prompt pay	10%
Effects on other profitable stocks.....	10%
Prestige of serving	10%
Miscellaneous	10%
	100%

"Be generous to your competitors; cut off any dealer who doesn't rate 50% on this scale!"—F. J. Nichols.

THE MANUFACTURING CONFECTIONER

want to be sure of getting all the business in your territory, be real generous to your competitors. Send them a list of those fellows who rate under 50% and say: "Here, Bill, we don't want to do business with these. We'll be glad to have you do business with them." If you give him enough of that kind, he will be down and out in a couple of years.

I was in the office of the Sales Manager of a plant, or rather in the President's office when the Sales Manager came in and laid a list on the President's desk. The President said: "What is this?"

He said: "That's the most profitable list I've ever shown you." (He had been with the company eleven years.)

The President said: "What is it?"

He said: "It is a list of the 42 small stops that our competitor has taken over in the last month," and if ever a man was praised for doing something in the sales department, that Sales Manager got it that morning because the owner of that business knew what it meant to lose those unprofitable accounts and in addition have his dear friend down the street take them on.

That is the way out. That is going to solve the problem of who stays in the candy business and who is going out.

Two Sales Where One Grew Before

Here is a retail grocer in Louisville who has doubled the sales of his candy. Here is his store. He has a corner store. The street car runs past here. Candy was over here on the side. In making over his store, in the process of making over his operation down there, he put it there, improved the grade of candy, and as a result the first

month he sold 100% more than he had sold before. Part of it was sold to his regular customers, but much of it to people who, waiting for street cars here, saw the candy and came in to get it.

And that thing can be repeated, gentlemen, up and down, back and forth, if you will work with them and show them what to do.

Here is my last word: For your industry, for your business, gentlemen, "GET THE FACTS." Whatever it costs you, it will be cheap. THEN USE THEM!

This survey, these figures you've got this morning, are worth just exactly the value of the paper they are printed on unless you use them. You can take these things and apply them.

Here is a word from a Chicago banker: "We are now in the morning hours of a new era of scientific management. The characteristics will be simplification, elimination of waste, more highly efficient person-

nel and a finer spirit of co-operation."

If you can get those four things in business, in this business of yours, gentlemen, if you will go forward on the foundation you have built, you've got all kinds of opportunities ahead of you for the real live ones.

Here's the street level. During the last three years it seems to me that you've been digging a hole in the ground here. It's a good deal like I saw in New York last week—blasting down through the rock. It has been a hard job and very expensive, but you had to go down, for you can't build the candy structure of the future on this stuff up here. Now the hole is pretty well dug. The pioneering has been done. There is some trimming up to do, but we are ready to start, and the next thing we have to do is put in a foundation, and that foundation must be built on facts if you want this structure to rise.

Far-Reaching Effect of Association Advertising Not Realized

You started your advertising campaign and that is a good deal like the billboard that goes up over the sidewalk here, telling that this is going to be the hundred-story structure when it gets done. Gentlemen, that advertising program of yours has accomplished more than you men in the industry realize. You have made some mistakes. Who wouldn't? You had never done it before. But you have gone further with it than you realize. The problem is this:

Are you going to cash in on it? Are you simply going to have a hole in the ground with a billboard that will gradually fade and become unsightly? That is for you to settle.

If you want to follow modern principles, you probably will make

it bigger, because today if we are going to succeed in business we've got to tell the world about it. They don't come after mouse traps any more.

What we build up here, how high a tower we put on it, depends on you men. We are always going to eat candy. The possibilities of selling more and better candy at a profit are tremendous. The only thing is this: Will you close up your ranks? Will you stop fighting among each other and present foursquare to the whole world a united candy industry, backed up by research, by experiments, by money for this, that and the other thing?

Then, gentlemen, your tower can go as high as you want to build it.

Answers to June Questions—Continued from Page 37

6. *Where is it planned to hold the 1933 N. C. A. convention?*

Ans. At Chicago, where it is proposed that a 50th Anniversary Golden Jubilee be held in connection with the candy industry?

Ans. The U. S. Department of Commerce distribution survey shows that as the average individual advertising expenditure rose from \$390 to \$262,593 per year the average individual sales rose from \$157,001 to \$3,738,467 per year.

7. *What four gases are now available for confectionery plant and raw material fumigation?*

Ans. Hydrocyanic acid, carbon disulphide, ethylene oxide, and chloropicrin.

8. *Is it possible to attain contin-*

uous cream production without sweating or remelt?

Ans. Yes. Equipment capable of handling from 12,000 to 15,000 pounds of fondant a day without impairment of texture has recently become available. A by-pass arrangement does away with the usual method of maturing in tubs, etc.

9. *What relation exists between sales volume and advertising ex-*

that the big producers of primary raw materials cooperate in the advertising plans of the confectionery industry?

Ans. By employing the Fisher-Body type of advertising to get across to the ultimate consumer the wholesomeness and desirability of their products as ingredients in manufactured foods, and in this way to break down the sales resistance encountered in merchandising the finished products by reason of the presence of these wholesome but commonly misunderstood ingredients.

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